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GEOLOGICAL SURVEY OF CANADA

ROBERT BELL, I.S.O., M.D., Sc.D. (CANTAB) LL.D., F.R.S.,
ACTING DIRECTOR.

SECTION OF MINES

ANNUAL REPORT

of the mineral production of Canada,

FOR

1904



OTTAWA

PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST
EXCELLENT MAJESTY

1906

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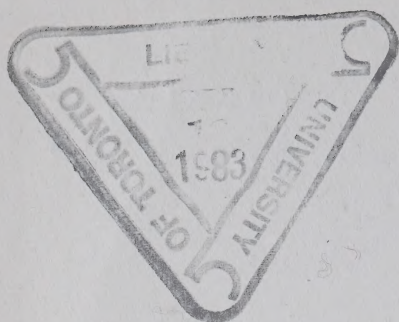
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STAFF OF THE MINES SECTION.

ELFRIC D. INGALL, M.E., A.R.S.M.,
in charge.

TECHNICAL ASSISTANTS :

THEO. C. DENIS, B.Sc. JNO. MCLEISH, B.A.

Mrs. W. SPARKS, Records Clerk.

To Dr. ROBERT BELL,
Acting Director, Geological Survey.

SIR,—I beg herewith to hand you the annual report of the Mines Section giving the completed and revised information descriptive of the Mineral Industries of Canada for 1904.

This has been preceded by an advance statement of the Mineral Production, dated 21st February, 1905, which, as usual, was only provisional and subject to revision,

Complete data relating to the mineral industries cannot be obtained until well on in the year following that dealt with, so that the issue of the final report is necessarily delayed. With contemplated changes in arrangements it is believed that a much earlier issue will be possible in the future.

Besides the preparation of the accompanying report, the staff of the Section has, as usual, been kept busy in many other kindred directions, such as answering numerous enquiries regarding the mineral resources, the mining and metallurgical industries of the country, as well as in collecting, filing and indexing all available information regarding the same. Mining districts have been visited, and studied as far as time and means permitted.

Acknowledgment of the work performed by the staff of the Section is heartily accorded in respect of all its functions.

I am Sir,

Your obedient servant,

OTTAWA, MINES SECTION.
30th March, 1906.

ELFRIC DREW INGALL.

EXPLANATORY NOTES.

YEAR AND TON USED.

The year referred to throughout this report is the calendar year, except for the figures of imports, which refer to the fiscal year ending June 30. The ton is that of 2,000 pounds, unless otherwise stated.

EXPORTS AND IMPORTS.

The figures given throughout the report referring to exports and imports are compiled from data obtained from the books of the Customs Department, and will occasionally show discrepancies, which, however, there are no means of correcting.

The exports and imports under the headings of each province do not necessarily represent the production and consumption of the province; e.g., material produced in Ontario is often shipped from Montreal and entered there for export, so falling under the heading, Quebec.

NOTE.—N.E.S. = Not elsewhere specified.

VALUES ADOPTED.

The values of the metallic minerals produced, as per returns to this Department, are calculated on the basis of their metallic contents at the average market price of the metal for the current year. Spot values have been adopted for the figures of production of the non-metallic minerals.

GENERAL NOTES.

As in the past, care is taken to avoid interference with private interests in the manner of publishing results, and all returns of production of individual mines are treated as confidential, unless otherwise arranged with those interested. The confidence of the mining community, thus gained, has resulted in an increasingly general response to our circulars, although to complete our data, personal application is still necessary in a small number of instances, and a yet more prompt

response on the part of all applied to, will help still further towards an earlier publication of the material.

The figures given throughout the reports are based, as far as possible, upon returns obtained direct from the various operators, or from official data, and the totals are checked by comparison with railway shipments, exports, and all other available sources of information. It can be therefore fairly claimed, that they are as accurate as it is possible to make such figures.

After investigation of the subject we have, however, found that in the nature of things, export and railway figures can only be taken as approximately correct in most instances. In the case of the export figures, entries are made, as a rule, by those having no technical knowledge of mineral substances, and in the case of the railways, but few of the shipments are actually weighed, so that car-load lots, for instance, may differ considerably from the theoretical load of the car.

The lists of operators given throughout the report are not put forward as complete in every case, only those known to be active being included. Producers finding their names omitted are invited to communicate with this office that they may be included in the next issue.

CORRECTION—ALTERATIONS.

Corrections and alterations have been made throughout this report wherever they seemed to be called for, according to more complete and reliable data, available since previous issues.

The tabulated statement given in the folded sheet at the beginning of the report, represents a compilation of all the similar statements found in previous reports, re-modelled and further revised wherever possible.

INTRODUCTION.

The grand total of the Mineral Production of Canada for 1904 is valued in the accompanying general table at \$60,073,897. In comparison with that for 1903, these figures show a falling off of \$1,666,616 or about 2·7 per cent. In 1886 when the collection of mineral statistics was begun by the Mines Section, the mineral output of the country was valued at a little over ten million dollars, so that in a period of eighteen years, the amount realized annually has increased some six times.

In the following table will be found the amount of increase and decrease in the valuation of the output in the leading industries. The greatest decrease, that of gold production, is over two and a third millions of dollars and is due chiefly to the considerable drop in the output of the precious metals from the Yukon placers (\$1,750,000) although supplemented by a falling off in the other districts. This decrease has been enhanced by a smaller output in copper, nickel, petroleum, etc. Against the decrease are to be set considerable increases in pig iron, lead, silver, asbestos, coal, etc. The industries dealt with in the tables represent over 86 per cent of the whole output and are thus illustrative of the more important features of the industry as a whole.

Products.	Increases.	Decreases.
	Value.	Value.
	\$	\$
Gold.....		2,381,073
Copper.....		342,852
Iron (pig iron Canadian ore).....	300,026	
Lead.....	848,659	
Nickel.....		783,051
Silver.....	337,453	
Asbestos.....		296,595
Coal.....	649,398	
Gypsum.....		14,985
Natural gas.....	126,166	
Petroleum.....		113,079
Salt.....	24,261	
Cement.....	112,992	
Total difference in above.....	2,398,955	3,931,635
	1,532,680	
	3,931,635	

MINERAL
PRODUCTION
OF CANADA.

Below is given the proportional increases and decreases in the different leading industries whose contributions to the grand total aggregate nearly 86 per cent of the whole. It will be noted that whilst there were increases both in quantity and value in most of the important branches of the mineral industry, the marked decreases are exhibited in the case of gold, copper, nickel, gypsum and petroleum. As these branches of the industry are responsible for over 46 per cent of the whole output, the lessened production in these instances has had an important effect.

Products.	Quantity.		Value.	
	Increase.	Decrease.	Increase.	Decrease.
Metallic—				
Copper		3·05		6·07
Gold		12·64		12·64
Pig iron (from Canadian ore only) ..	62·41		42·39	
Pig iron (from both home and im- ported ores)	1·87			1·46
Lead	106·91		110·42	
Nickel		15·564		15·654
Silver	11·85		19·74	
Non-metallic—				
Asbestos and asbestic.	16·29		31·90	
Coal	3·69		4·07	
Gypsum	10·01			3·86
Natural gas			62·39	
Petroleum	3·46			10·78
Salt	11·25		8·15	
Portland cement	45·02		11·94	

The following table gives the percentage contributions of the various industries to the grand total and enables an opinion to be formed, in a general way, of their relative importance.

SESSIONAL PAPER No. 26a

PROPORTIONATE VALUE OF DIFFERENT MINERAL PRODUCTS, 1904.

MINERAL
PRODUCTION
OF CANADA.

Products.	Contri- buting over 10 p.c.	Contri- buting between 10 and 1 p.c.	Contri- buting under 1 p.c.	Total.
1 Coal	27·62			
2 Gold	27·40			
3 Copper		8·83		
4 Nickel		7·02		
5 Bricks (estimated)		4·96		
6 Silver		3·41		
7 Building stone (estimated)		3·21		
8 Lead		2·69		
9 Cement		2·22		
10 Asbestos		2·04		
11 Pig iron (from Canadian ores)		1·68		
12 Petroleum		1·56		
13 Lime (estimated)		1·29		
14 Sewer pipe			0·73	
15 Gypsum			0·62	
16 Natural gas			0·54	
17 Salt			0·54	
17 Sundry under 1 per cent.			3·64	
Total	55·02	38·91	6·07	100·00

In the following table are compared the proportional contributions of the several provinces to the total output of the Dominion. As the figures given have been reduced to a uniform basis of valuation, the comparative figures are as nearly accurate as is possible.

PRODUCTION BY PROVINCES, 1904.

Province.	Value of Production.	Per cent.
	\$	
Nova Scotia	11,212,746	18·7
New Brunswick	559,913	0·9
Quebec	3,688,482	6·1
Ontario	12,582,843	20·9
Manitoba and N. W. Territories, including Yukon	12,713,613	21·2
British Columbia	19,316,300	32·2
Total	60,073,897	

MINERAL
PRODUCTION
OF CANADA.

The growth of the mineral industry of Canada as a whole and the comparison of its progress with that of the United States, is illustrated in the following table, the figures speaking for themselves.

YEAR.	CANADA.		UNITED STATES.	
	Increase or decrease per cent in Grand Total.	Production per capita.	Increase or decrease per cent in Grand Total.	Production per capita.
	p.c.	\$ cts.	p.c.	\$ cts.
1904.....	decr. 2·70	10·47	decr. 9·18	15·75
1903.....	" 2·08	11·18	incr. 12·64	17·77
1902.....	" 3·73	11·67	" 4·16	15·57
1901.....	incr. 3·42	12·40	" 2·60	14·03
1900.....	" 30·06	11·99	" 10·10	14·02
1899.....	" 28·13	9·33	" 39·86	12·84
1898.....	" 34·89	7·32	" 10·61	9·38
1897.....	" 26·90	5·52	" 1·33	8·66
1896.....	" 8·79	4·40	" 21	8·73
1895.....		4·09		8·90
1890.....	} 64·00 {	3·50	} " 38·97 {	9·89
1886....		2·23		7·76

The figures to be found in the reports of the Department of Trade and Commerce relating to exports of mineral substances have been selected and compiled to form the two following tables.

It will be observed that the metallic products comprise the largest items in the table, gold alone accounting for about 48 per cent, copper nearly 13 per cent, silver about 5·8 per cent, iron and steel some 4 per cent, and nickel about 3·3 per cent. Under the heading of these chief mineral products about 74 per cent of the whole exports are accounted for. If to these we add the coal and coke at 13·4 per cent approximately, 12·6 per cent only is to be credited to the numerous other mineral substances.

Some interesting particulars as to the destination of the exports are given in the second table. The great bulk of the mineral exports go to the United States, the proportion representing 95·25 per cent of the total. Only some 3·5 per cent is credited to points within the

SESSIONAL PAPER No. 26a

British Empire, leaving but 1.25 per cent for a number of foreign countries. MINERAL
PRODUCTION
OF CANADA.

EXPORTS.

MINERALS AND MINERAL PRODUCTS OF CANADA DURING CALENDER YEAR 1904.

Products.	Value.	Products.	Value.
Aluminum	\$ 298,388	Manufactures of metals, other than iron or steel..	\$ 478,435
Antimony ore.....	7,237	Mica.....	198,482
Arsenic.....	6,900	Mineral pigments.....	7,260
Asbestos.....	1,160,887	" water.....	2,917
Barytes.....	5,178	Nickel.....	1,091,349
Bricks.....	5,357	Oil, crude.....	213
Cement.....	5,494	" refined.....	470
Clay, manufactures of....	2,722	Ores unspecified.....	222,117
Chromite.....	60,336	Platinum.....	140
Coal.....	4,036,373	Phosphate.....	5,348
Coke.....	345,031	Plumbago, crude.....	9,609
Copper.....	4,226,214	" mfrs. of.....	6,958
Feldspar.....	29,263	Pyrites.....	49,911
Gold.....	15,737,477	Salt.....	4,186
Grindstones.....	26,895	Sand and gravel	129,803
" rough.....	8,717	Silver.....	1,904,394
Gypsum, crude.....	316,436	Stone unwrought.....	17,802
" ground.....	2,333	" wrought.....	4,760
Iron and steel.....	1,318,482	Other articles.....	18,523
Iron ore.....	401,738		
Lead.....	559,461		
Lime.....	73,838		
Manganese ore.....	2,706	Total.....	32,790,140

EXPORTS.

DESTINATION OF PRODUCTS OF THE MINE, DURING THE FISCAL YEAR, 1903-1904.

Destination.	Value.	Destination.	Value.
United States.....	\$32,025,193	Holland.....	\$10,806
Great Britain.....	641,072	Cuba.....	8,045
Newfoundland.....	413,574	Hawaii.....	5,864
Norway and Sweden.....	143,593	British Africa.....	5,464
British West Indies.....	79,480	Spain.....	1,939
France.....	63,463	Denmark.....	1,309
Germany.....	56,374	Portugal.....	413
China.....	40,876	Russia.....	400
St. Pierre Miquelon.....	35,029	Australia.....	293
British Africa.....	34,807	Argentine.....	108
Belgium.....	30,326		
Italy.....	28,311	Total.....	\$33,626,739

MINERAL
PRODUCTION
OF CANADA.

From the reports of the Trade and Commerce Department, the various items of imports of mineral and crude manufactured metallic materials have been selected and compiled to form the subjoined table, covering the fiscal year 1903-1904. Although the selection is necessarily made in a more or less arbitrary manner many interesting points come to light. In the items running over one million it will be noted that very much the largest, representing over 38 per cent of the grand total, is that including machinery, hardware and highly manufactured articles which would come in competition with the manufacturer rather than the miner and smelter. Semi-finished products of iron pig, blooms, bars, plates, &c., together with various iron alloys used as raw material by manufacturers of more finished products amount to over ten million dollars, or about 13 per cent. The country imports over \$20,000,000 worth of coal, of which about half is anthracite and half bituminous. The items before mentioned, although comprising but five entries out of the seventy-nine in the table, cover 77 per cent of the whole. Other items severally ranging in value between one and two and a half million dollars or from 1 to 3 per cent, include earthenware, copper and manufactures of cement, brass and manufactures of tin, and manufactures of mineral pigments, ores of metals; petroleum and products; precious stones. These constitute yet another 16.6 per cent which added to the 77 per cent, account for about 93 per cent of the total under fourteen heads. The remainder is made up of some sixty-four items covering a great variety of substances, many of which will doubtless be eventually replaced by home products, whilst others will continue to come in owing to the greater proximity of the foreign source of production and for other similar causes.

SESSIONAL PAPER No. 26a

IMPORTS.

MINERAL
PRODUCTION
OF CANADA.

MINERAL AND MINERAL PRODUCTS FOR FISCAL YEAR 1903-1904.

Products.	Value.	Products.	Value.
Alumina.....	\$ 108,956	Lime.....	\$ 39,639
Alum and aluminous cake.....	53,796	Litharge.....	32,633
Aluminium.....	117,492	Lithographic stone.....	17,981
Antimony.....	8,228	Manganese, oxide of.....	7,051
" salts.....	8,884	Magnesia.....	5,754
Arsenic.....	12,421	Marble and mfrs. of.....	181,511
Asbestos and mfrs. of.....	83,827	Mercury.....	80,658
Asphaltum.....	139,026	Metallic alloys—	
Bells and gongs.....	79,073	Babbit metal.....	51,785
Bismuth.....	893	Brass and mfrs. of.....	1,257,477
Blast furnace slags.....	6,808	Britannia metal.....	35,466
Borax.....	84,724	German silver.....	49,659
Bricks and tiles.....	295,421	Type metal.....	6,596
" fire.....	365,479	Mineral and bituminous	
Buhrstones.....	35	substances, N.E.S.....	43,137
Cement.....	1,014,713	Mineralogical specimens.....	1,618
Chalk, prepared.....	19,163	Mineral and metallic pig-	
Clays.....	144,706	ments, paints and colours.....	1,138,945
Coal.....	20,113,554	Mineral water.....	721
" tar and pitch.....	122,598	Nickel.....	14,682
Coke.....	765,123	Ores of metals, N.O.P.....	1,112,193
Copper and mfrs. of.....	1,461,925	Paraffine wax.....	18,440
Cryolite.....	14,513	" candles.....	9,078
Crucibles, clay or plumbago.....	28,773	Petroleum and products of.....	1,906,759
Chloride of lime.....	46,863	Phosphate (fertilizer).....	8,000
Earthenware.....	1,611,356	Platinum, mfrs. of.....	28,112
Electric carbons.....	88,779	Precious stones.....	1,206,437
Emery.....	50,899	Pumice.....	6,537
Feldspar, quartz, flint, &c.....	19,280	Salt.....	412,268
Fullers' earth.....	5,554	Saltpetre.....	86,308
Fossils.....	949	Sand and gravel.....	107,547
Gold and silver and mfrs. of.....	448,259	Slate and mfrs. of.....	86,057
Graphite and mfrs. of.....	40,592	Stone and mfrs. of.....	280,982
Gypsum, plaster of Paris, &c.....	4,272	Sulphate of copper.....	75,938
Iron and steel—		" iron.....	1,452
Pigs, scraps, blooms, &c.....	1,560,028	Sulphur.....	204,663
Rolled, bars, plates, &c.,		Sulphuric acid.....	2,563
including chrome steel.....	8,485,196	Tufa calcareous.....	11,366
Ferro-silicon, ferro-man-		Tin and manufactures of.....	2,389,557
ganese, &c.....	75,554	Whiting.....	42,507
Manufactures of, machi-		Zinc and mfrs. of.....	322,401
nery, hardware, &c.....	30,502,168		
Kainite.....	5,430	Total.....	79,512,967
Lead and mfrs. of.....	233,179		

PRECIOUS
METALS.

PRECIOUS METALS.

Under this heading, the metals gold and silver are considered together. The rarer metals of the platinum group are considered under their respective names as platinum and palladium.

GOLD.

The total production of gold in Canada during the year 1904 was \$16,462,517, a decrease of \$2,381,073 as compared with 1903. Every province shows a lower figure, the main decrease being the Yukon's, the output of which was \$1,750,000 less in 1904 than in 1903. The increase in the Canadian production of gold was very rapid between 1896 and 1900, in which year it reached its maximum. It is also interesting to note that the Northwest Territories and British Columbia are together responsible for 98 per cent of the total production. Over seventy per cent is gold derived from working of placers; the balance is from lode mining.

Statistics of the total production in Canada and the various provinces are shown in the following table.

TABLE 1.

PRECIOUS METALS.

GOLD.—ANNUAL PRODUCTION IN CANADA.

Calendar Year.	*Ounces. Fine.	Value.	Calendar Year.	*Ounces. Fine.	Value.
1887.....	57,465	\$ 1,187,804	1896.....	133,274	\$ 2,754,774
1888.....	53,150	1,098,610	1897.....	291,582	6,027,016
1889.....	62,658	1,295,159	1898.....	666,445	13,775,420
1890.....	55,625	1,149,776	1899.....	1,028,620	21,261,584
1891.....	45,022	930,614	1900.....	1,350,176	27,908,153
1892.....	43,909	907,601	1901.....	1,167,320	24,128,503
1893.....	47,247	976,603	1902.....	1,032,253	21,336,667
1894.....	54,605	1,128,688	1903.....	911,639	18,843,590
1895.....	100,806	2,083,674	1904.....	796,445	16,462,517

*Calculated from the value at the rate of \$20.67 per ounce.

GOLD—PRODUCTION BY PROVINCES AND DISTRICTS, CALENDAR YEAR 1904.

Provinces.	*Ounces. Fine.	Value.
Nova Scotia.....	(b) 10,363	\$ 214,209
Quebec.....	140	2,900
Ontario.....	(b) 1,935	40,000
North-west Territories—		
Yukon District.....	(a) 507,983	10,500,000
Saskatchewan River.....	(a) 24	500
British Columbia.....	(c) 276,000	5,704,908
Total.....	796,445	16,462,517

\$5,704,908

NOVA SCOTIA.

The figures for this province show a very large decrease as compared with the output for 1903, but this does not necessarily prove a falling off in the industry. As a matter of fact several mines have done very extensive development work to the detriment of the output; the small individual miner who has been the rule up to now, is fast giving place to companies on a large scale who can work, profitably, much lower grade ores.

According to the report of Mr. Wetherbee of the Nova Scotia Mines Department, "The Government anticipating a special discussion on the question of deep mining, on which they had legislated during the previous session, employed Mr. Faribault of the Geological Survey, to make a special report on the subject which was gone into very fully. One direct result of this discussion was the amendment of the above legislation, so that aid to a deep shaft would be given by the Government to the whole sinking, from the surface to a depth of 2000 feet, instead of requiring the miner to do the first 500 feet of work at his own expense as provided by the first act. This amendment brought forth several bona fide applications for the aid almost immediately. In some of the districts to which these applications applied Mr. Faribault's services were again used in reporting on their suitability. The districts where this aid was asked, include Isaacs Harbour, Malaga, Caribou and Sherbrooke.

It should be particularly mentioned, that the past season has marked a stage in Nova Scotia gold mining not before reached, two mines having attained vertical depths of 1000 feet or over, and at both places (over 100 miles apart) was gold found, presumably in paying quantities".

PRECIOUS
METALS.

TABLE 3.
PRECIOUS METALS.
GOLD.—NOVA SCOTIA:—ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year	Value.
1862.....	\$141,871	1884.....	\$313,554
1863.....	272,448	1885.....	432,971
1864.....	390,349	1886.....	455,564
1865.....	496,357	1887.....	413,631
1866.....	491,491	1888.....	436,939
1867.....	532,563	1889.....	510,029
1868.....	400,555	1890.....	474,990
1869.....	348,427	1891.....	451,503
1870.....	387,392	1892.....	389,965
1871.....	374,972	1893.....	381,095
1872.....	255,349	1894.....	389,338
1873.....	231,122	1895.....	453,119
1874.....	178,244	1896.....	493,568
1875.....	218,629	1897.....	562,165
1876.....	233,585	1898.....	538,590
1877.....	329,205	1899.....	617,604
1878.....	245,253	1900.....	598,553
1879.....	268,328	1901.....	546,963
1880.....	257,823	1902.....	627,357
1881.....	209,755	1903.....	527,806
1882.....	275,090	1904.....	214,209
1883.....	301,207		

Table 4 which follows gives the tonnage of ore treated every year since 1862, and the average yearly yield. Table 5 gives the total tonnage per district since the beginning of the industry.

TABLE 4.
PRECIOUS METALS.
GOLD.—NOVA SCOTIA: ORE TREATED AND YIELD OF GOLD PER TON.

Calendar Year.	Tons Treated.	Yield of Gold per Ton.	Calendar Year.	Tons Treated.	Yield of Gold per Ton.
1862.....	6,473	\$21·91	1884.....	25,186	12·44
1863.....	17,000	16·02	1885.....	28,890	14·98
1864.....	21,431	18·21	1886.....	29,010	15·70
1865.....	24,421	20·32	1887.....	32,280	12·81
1866.....	32,157	15·28	1888.....	36,178	12·08
1867.....	31,384	16·96	1889.....	39,160	13·02
1868.....	32,259	12·41	1890.....	42,749	11·11
1869.....	35,144	19·91	1891.....	36,351	12·42
1870.....	30,824	12·56	1892.....	32,552	11·98
1871.....	30,787	12·17	1893.....	42,354	8·99
1872.....	17,089	14·94	1894.....	55,357	7·04
1873.....	17,708	13·05	1895.....	60,600	7·47
1874.....	13,844	12·87	1896.....	69,169	7·13
1875.....	14,810	14·76	1897.....	73,192	7·68
1876.....	15,490	15·08	1898.....	82,774	6·50
1877.....	17,369	18·95	1899.....	112,226	5·50
1878.....	17,989	13·63	1900.....	87,390	6·85
1879.....	15,936	16·83	1901.....	91,948	5·32
1880.....	13,997	18·42	1902.....	93,842	6·68
1881.....	16,556	12·66	1903.....	103,856	5·08
1882.....	21,081	13·04	1904.....	45,436	4·71
1883.....	25,954	\$11·60			

TABLE 5.
PRECIOUS METALS.

PRECIOUS
METALS.

GOLD—NOVA SCOTIA :—PRODUCTION OF THE DIFFERENT DISTRICTS FROM 1862
TO 1904, INCLUSIVE.

Districts.	Tons of Ore crushed.	Total Yield.				Average Yield per ton of 2000 lbs.
		Oz.	Dwt.	Grs.	Value at \$19.00 per oz.	
					\$	
Brookfield	87,777	39,220	15	18	745,195	8.49
Caribou	168,034	53,924	15	7	1,024,571	6.10
Central Rawdon...	13,340	10,121	11	21	192,310	14.42
Fifteen Mile Stream	42,483	18,800	.....	5	357,200	8.41
Lake Catcha.....	18,565	15,040	10	18	285,770	15.39
Malaga.....	24,787	17,486	12	4	332,246	13.40
Montague.....	27,006	40,359	2	20	766,824	28.39
Oldham.....	51,655	55,174	7	21	1,048,314	20.29
Renfrew	52,211	45,409	14	13	862,785	16.52
Salmon River.....	104,136	34,100	11	21	647,911	6.32
Sherbrooke.....	312,776	158,856	16	13	3,018,280	9.65
Stormont.....	305,304	88,515	8	19	1,681,793	5.51
Tangier	40,457	23,098	5	2	438,867	10.85
Uniacke	64,415	43,632	8	21	829,016	12.87
Waverly.....	155,908	70,833	12	23	1,345,839	8.63
Wine Harbour....	68,165	39,465	17	3	749,851	11.00
Other districts.....	128,078	80,318	18	17	1,526,060	11.91
Total.....	1,665,097	834,359	11	6	15,852,832	9.52

PRECIOUS
METALS.

Table 6 gives the production by district for the year 1904.

TABLE 6.

PRECIOUS METALS.

GOLD.—NOVA SCOTIA :—DISTRICT DETAILS, CALENDAR YEAR, 1904.

Districts.	Mills.	Tons Crushed.	Total Yield of Gold.			Average Yield of Gold per Ton.		
			Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Ardoise.....	1	7	.....	4	0	..	..	14
Brookfield.....	2	8,247	2,329	5	19	..	5	15
Moose River.....	2	2,466	137	18	0	..	1	3
Caribou.....	4	7,518	1,569	7	0	..	4	4
Clam Harbour.....	1	56	50	4	9	..	17	22
Carleton.....	1	103	64	8	0	..	12	12
Ecum Secum.....	2	365	105	0	0	..	5	18
Harrigan Cove.....	2	276	187	10	0	..	13	14
Kemptville.....	1	165	44	4	0	..	5	8
Lake Catcha.....	2	60	88	7	0	1	9	10
Leipsigate.....	1	4,450	1,329	14	0	..	5	23
McKay Settlement.....	1	43	7	18	8	..	3	16
Montague.....	1	841	267	1	9	..	6	5
Oldham.....	1	527	748	3	0	1	8	9
Renfrew.....	1	636	151	0	0	..	4	18
Salmon River.....	1	534	202	5	0	..	7	13
Sherbrooke.....	4	8,445	1,032	12	12	..	2	10
Stormont.....	3	4,441	766	7	4	..	3	10
South Uniacke.....	1	1,066	455	11	12	..	8	13
Mount Uniacke.....	1	528	245	2	6	..	9	7
Whiteburn.....	1	162	57	13	0	..	7	3
Wine Harbour.....	2	4,443	1,376	3	10	..	6	4
Gold River.....	1	57	53	9	23	..	18	18
Mortared.....	.....	.....	4	6	11	..	..	..
Total.....	.....	45,436	11,273	16	3	..	4	22

QUEBEC.

The gold of the province of Quebec, with the exception of a very small amount, is derived from desultory working of the Beauce region placers and from the pyritous ores of the Eastern Townships which are used primarily for the manufacture of sulphuric acid

TABLE 7.
PRECIOUS METALS.
GOLD.—QUEBEC :—ANNUAL PRODUCTION.

PRECIOUS
METALS.

Calendar Year.	Value.	Calendar Year.	Value.
1877.....	\$12,057	1891.....	\$ 1,800
1878.....	17,937	1892.....	12,987
1879.....	23,972	1893.....	15,696
1880.....	33,174	1894.....	29,196
1881.....	56,661	1895.....	1,281
1882.....	17,093	1896.....	3,000
1883.....	17,787	1897.....	900
1884.....	8,720	1898.....	6,089
1885.....	2,120	1899.....	4,916
1886.....	3,981	1900.....	Nil.
1887.....	1,604	1901.....	3,000
1888.....	3,740	1902.....	8,073
1889.....	1,207	1903.....	3,712
1890.....	1,350	1904.....	2,900

ONTARIO.

This province shows a very heavy decline in the output of gold for the year. In 1904 this only reached \$40,000, which is less than twenty-five per cent of the production for 1903. This was derived mainly from several mines in the Lake of the Woods district, one in Eastern Ontario and also from the treatment of the matte made from the Sudbury ores.

TABLE 8.
PRECIOUS METALS.
GOLD.—ONTARIO :—ANNUAL PRODUCTION.

Calendar Year.	*Ounces. Fine.	Value.
1887.....	327	\$ 6,760
1888.....		
1889.....		
1890.....		
1891.....	97	2,000
1892.....	344	7,118
1893.....	708	14,637
1894.....	1,917	39,624
1895.....	3,015	62,320
1896.....	5,563	115,000
1897.....	9,158	189,294
1898.....	12,864	265,889
1899.....	20,395	421,591
1900.....	14,392	297,495
1901.....	11,845	244,837
1902.....	11,119	229,828
1903.....	9,097	188,036
1904.....	1,935	40,000

*Calculated from the value at the rate of \$20.67 per ounce.

PRECIOUS
METALS.

NORTH-WEST TERRITORIES.

Practically the whole output of gold of the North-west Territories is attributable to the Yukon, as only five hundred dollars was produced from the Saskatchewan river. The Yukon production reached its maximum in 1900, and since then it has gradually declined, owing to the exhaustion of the richer ground. In 1904 the figures show a decrease to less than half the production of 1900.

TABLE 9.
PRECIOUS METALS.
GOLD.—NORTH-WEST TERRITORIES :—PRODUCTION.

Calendar Year.	Yukon District.		Saskatchewan River.	
	*Ounces. Fine.	Value.	*Ounces Fine.	Value.
		\$		\$
1885 }	4,838	100,000	.....	.....
1886 }				
1887.....	3,387	70,000	102	2,100
1888.....	1,935	40,000	58	1,200
1889.....	8,466	175,000	968	20,000
1890.....	8,466	175,000	194	4,000
1891.....	1,935	40,000	266	5,500
1892.....	4,233	87,500	508	10,506
1893.....	8,515	176,000	466	9,640
1894.....	6,047	125,000	725	15,000
1895.....	12,095	250,000	2,419	50,000
1896.....	14,514	300,000	2,661	55,000
1897.....	120,948	2,500,000	2,419	50,000
1898.....	483,793	10,000,000	1,209	25,000
1899.....	774,069	16,000,000	726	15,000
1900.....	1,077,649	22,275,000	242	5,000
1901.....	870,827	18,000,000	726	15,000
1902.....	701,500	14,500,000	484	10,000
1903.....	592,646	12,250,000	48	1,000
1904.....	507,983	10,500,000	24	500
Total.....	5,203,846	107,563,500	14,245	294,446

* Calculated from the value at the rate of \$20.67 per ounce.

SESSIONAL PAPER No. 26a

The following statement of gold production of the Yukon, royalty paid, &c., is taken from the report of the Timber and Mines Branch of the Department of the Interior.

PRECIOUS METALS.

Fiscal Year.	Total Gold Production.	Total Exemption.	Royalty Collected on.	Royalty Paid.
	\$	\$	\$	\$
1898.....	3,072,773	339,845	2,732,928	273,292
1899.....	7,582,283	1,699,657	5,882,626	588,262
1900.....	9,809,464	2,501,744	7,307,720	730,771
1901.....	9,162,082	1,927,666	7,236,522	592,660
1902.....	9,566,340	1,199,114	8,367,225	331,436
1903.....	12,113,015	.....	12,113,015	302,893
1904.....	10,790,663	.....	10,790,663	272,217

BRITISH COLUMBIA.

The production of gold of this province for 1904 is \$5,704,908 which is a diminution of \$168,128 when compared with the output for 1903. Of this total \$1,115,300 is derived from placer workings, and \$4,589,608 is from lode mining. 'The greater part of the gold obtained from lode mining in British Columbia, is found in connexion with other metals and only separated or collected by smelting, probably not 5% of the product being obtained from stamp mills. The lode gold product for 1904 was \$4,589,608 and was \$223,008 less than in 1903, due to the diminished output of the Rossland and Nelson districts.'

TABLE 10.
PRECIOUS METALS.
GOLD-BRITISH COLUMBIA:—ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year.	Value.
1858.....	\$ 705,000	1882.....	\$ 954,085
1859.....	1,615,072	1883.....	794,252
1860.....	2,228,543	1884.....	736,165
1861.....	2,666,118	1885.....	713,738
1862.....	2,656,903	1886.....	903,651
1863.....	3,913,563	1887.....	693,709
1864.....	3,735,850	1888.....	616,731
1865.....	3,491,205	1889.....	588,923
1866.....	2,662,106	1890.....	494,436
1867.....	2,480,868	1891.....	429,811
1868.....	2,372,972	1892.....	399,525
1869.....	1,774,978	1893.....	379,535
1870.....	1,336,956	1894.....	530,530
1871.....	1,799,440	1895.....	1,266,954
1872.....	1,610,972	1896.....	1,788,206
1873.....	1,305,749	1897.....	2,724,657
1874.....	1,844,618	1898.....	2,939,852
1875.....	2,474,904	1899.....	4,202,473
1876.....	1,786,648	1900.....	4,732,105
1877.....	1,608,182	1901.....	5,318,703
1878.....	1,275,204	1902.....	5,961,409
1879.....	1,290,058	1903.....	5,873,036
1880.....	1,013,827	1904.....	5,704,908
1881.....	1,046,737		

PRECIOUS
METALS.

Table 11 is very interesting as it shows the relative importance of the different producing district.

TABLE 11.

PRECIOUS METALS.

GOLD :—BRITISH COLUMBIA.—PRODUCTION BY DISTRICTS—1904.

Districts.	Gold, Placer.		Gold, Lode.	
	Ounces.	Value.	Ounces.	Value.
Cariboo—		\$		\$
Cariboo Division	15,650	313,000		
Quesnel "	7,500	150,000		
Omineca "	580	11,600		
Cassiar—				
Atlin Lake Division	26,500	530,000		
All other divisions	575	11,500	766	15,833
East Kootenay—				
Fort Steele Division	*1,000	20,000		
Windermere—Golden	50	1,000		
West Kootenay—				
Ainsworth Division			2	41
Nelson "	*150	3,000	14,100	291,447
Slocan and Slocan City			160	3,307
Trail Creek			133,095	2,751,074
All other divisions	*50	1,000	3,615	74,722
Lillooet	1,725	34,500	4	83
Yale				
Grand Forks, etc	*150	3,000	55,505	1,147,288
Similkameen	125	2,500		
Yale	1,560	31,200	183	3,783
Coast and other districts	*150	3,000	14,612	302,030
Totals	55,765	1,115,300	222,042	4,589,608

Estimated.

The oldest and largest producing district is that of Rossland or Trail Creek in West Kootenay, and figures concerning its output may prove of interest.

SESSIONAL PAPER No. 26a

The following tables show the production of the Rossland mines and illustrate the average results attained during the past eleven years.—

PRECIOUS METALS.

NET PRODUCTION PER SMELTER RETURNS.

Year.	Ore, tons, 2,000 lb.	Gold, oz.	Silver, oz.	Copper, lb.	Value.
1894.....	1,856	3,723	5,357	106,229	\$ 75,510
1895.....	19,693	31,497	46,702	840,420	702,459
1896.....	38,075	55,275	89,285	1,580,635	1,243,360
1897.....	68,804	97,024	110,068	1,819,586	2,097,280
1898.....	111,282	87,343	170,804	5,232,011	2,470,811
1899.....	172,665	102,976	185,818	5,693,889	3,229,086
1900.....	217,636	111,625	167,378	2,071,865	2,739,300
1901.....	283,360	132,333	970,460	8,333,446	4,621,299
1902.....	329,534	162,146	373,101	11,667,807	4,893,395
1903.....	360,786	145,353	209,537	8,652,127	4,255,958
1904.....	312,991	133,095	181,830	7,119,876	3,760,866
Total.....	1,916,682	1,062,390	2,510,340	53,117,891	30,089,324

AVERAGE NET SMELTER RETURNS OR ACTUAL YIELD PER TON.

Year.	Gold.	Silver.	Copper.	Value.
	Ounces.	Ounces.	Per cent.	\$ cts.
1894.....	2.00	2.89	2.85	40.69
1895.....	1.60	2.41	2.10	35.67
1896.....	1.45	2.34	2.08	32.65
1897.....	1.42	1.60	1.32	30.48
1898.....	.78	1.54	2.35	22.10
1899.....	.596	1.07	1.65	18.70
1900.....	.513	.769	.476	12.58
1901.....	.467	3.424	1.470	16.31
1902.....	.492	1.132	1.770	14.85
1903.....	.403	.581	1.199	11.80
1904.....	.425	.581	1.137	12.01
Average 1,916,682 tons....	.554	1.309	1.385	15.70

As has been noticed above, the greater part of British Columbia gold is obtained from the treatment of ores containing other metals, and it is recovered in the process of smelting and refining; only a very small proportion of the lode gold is from free-milling ores.

The different districts producing the auriferous sulphide ores are referred to under the heading of copper and lead.

As to placer mining it may be interesting to quote from the Provincial Mineralogist's report for 1904. "The placer gold mining industry of the province this past year produced \$1,115,300 in gold, an increase of about 5 per cent over the preceding year, thanks to a successful season in the Atlin camp.....The output of the

PRECIOUS
METALS.

camp was about \$530,000, an increase of 20 per cent over the preceding year, a most encouraging showing, especially as the dredge, from which so much was expected, failed mechanically to handle the dirt. The two hydraulic companies which started up last summer made very creditable productions and promise to do better next year. In the Dease Lake district the output this year was only about one-third of what it was the previous year, as the most important property in the camp did not produce this past season, being engaged exclusively in installing a new and larger plant.

"In the Cariboo District the placer output was almost exactly the same as last year, the Barkerville camp being just the same, while a deficit in the Omineca section was just about balanced by an increased production in the Grand Forks section, where the Consolidated Cariboo Company, although only having water to sluice 88 days, produced \$90,000 of gold.

"In the Fraser River section, placer mining is chiefly carried on on the river bars at extreme low water, the results this year have been very disappointing, as the usual very low water did not occur, since the winter's snow starting to go very early, went gradually, with no extremes of high or low water, so these bars could not be worked to the usual extent

"Dredging for gold has not, as yet, been a commercial success, despite all attempts to solve this problem. The difficulties are mechanical but, therefore, none the less difficult to surmount. Many of the propositions which have been started have had ground sufficiently rich to pay very handsomely if the conditions were right—that is, freedom from boulders or hard clay cement, a dredgible bedrock, and the gold not in too fine a state of division. The dredge in Atlin attempted to handle dirt that proved too tough for it, and from reports it would appear that the Lillooet dredge was too weakly constructed to stand the work, and the constant stoppages for repairs interfered with what promised to be a very successful run.

"As yet the only attempt made in this province to work a placer gold property with a steam shovel was in Fort Steele Mining Division and described in the report for 1903. The conditions there were scarcely favourable and the shovel was not equipped with an auxiliary elevator to take the gravel from the shovel to the sluice—which appears to be requisite. This was to have been provided for this shovel but is not yet in place, and the machine has not been worked this season."

SILVER.

The total figures of production of silver for 1904, show a marked increase as compared with those of 1903. The contributing provinces

SESSIONAL PAPER No. 26a

were British Columbia, Ontario, Yukon Territory and Quebec, the relative amount of each being in the order named. The increase in production is largely due to the bounty on lead granted by the Federal Government, which led to the reopening of some mines of argentiferous galena in the East Kootenay district. Another new source of the metal is the district recently opened on the northwest shore of Lake Timiskaming, which is responsible for most of the Ontario production.

PRECIOUS METALS.

TABLE 12.
PRECIOUS METALS.
SILVER.—ANNUAL PRODUCTION.

Year.	Ounces.	Value.	Average Price per ounce.	Year.	Ounce.	Value.	Average Price per ounce.
		\$	Cts.			\$	Cts.
1887....	355,083	347,271	98·0	1896....	3,205,343	2,149,503	67·06
1888....	437,232	410,998	94·0	1897....	5,558,446	3,323,395	59·79
1889....	383,318	358,785	93·6	1898....	4,452,333	2,593,929	58·26
1890....	400,687	419,118	104·6	1899....	3,411,644	2,032,658	59·58
1891....	414,523	409,549	98·0	1900....	4,463,225	2,740,362	61·33
1892....	310,651	272,130	86·0	1901....	5,539,192	3,265,354	58·95
1893....		330,128	77·0	1902....	4,291,317	2,238,351	52·16
1894....	847,697	534,049	63·0	1903....	3,198,581	1,709,642	53·45
1895....	1,578,275	1,030,299	65·28	1904....	3,577,526	2,047,095	57·22

TABLE 13.
PRECIOUS METALS.
SILVER.—PRODUCTION BY PROVINCES.

CALENDAR YEAR.	ONTARIO.		QUEBEC.		BRITISH COLUMBIA.		YUKON TERRITORY.	
	Ounces.	Value.	Ounces.	Value.	Ounces.	Value.	Ounces.	Value.
		\$		\$		\$		\$
1887..	190,495	186,304	146,898	143,666	17,690	17,301		
1888..	208,064	195,580	149,388	140,425	79,780	74,993		
1889..	181,609	169,986	148,517	139,012	53,192	49,787		
1890..	158,715	166,016	171,545	179,436	70,427	73,666		
1891..	225,633	222,926	185,584	183,357	3,306	3,266		
1892..	41,581	36,425	191,910	168,113	77,160	67,592		
1893..		8,689		126,439		195,000		
1894..			101,318	63,830	746,379	470,219		
1895..			81,753	53,369	1,496,522	976,930		
1896..			70,000	46,942	3,135,343	2,102,561		
1897..	5,000	2,990	80,475	48,116	5,472,971	3,272,289		
1898..	85,000	49,521	74,932	43,655	4,292,401	2,500,753		
1899..	202,000	120,352	40,231	23,970	2,939,413	1,751,302	230,000	137,034
1900..	161,650	99,110	58,400	35,817	3,958,175	2,427,548	290,000	177,857
1901..	151,400	89,250	41,459	24,440	5,151,333	3,036,711	195,000	114,953
1902..	145,000	75,632	42,500	22,163	3,917,917	2,043,586	185,900	96,965
1903..	17,777	9,502	28,600	15,287	2,996,204	1,601,471	156,000	83,382
1904..	206,875	118,376	15,000	8,583	3,222,481	1,843,935	133,170	76,201

PRECIOUS
METALS.

BRITISH COLUMBIA.

The total production of this province amounted to 3,222,481 ounces, derived mainly from two districts, the Slocan and the Fort Steele. The output is 226,277 ounces greater than in 1903, which may be chiefly attributable to the reopening of the St. Eugene mine, an argentiferous galena vein which could not operate profitably without the Government bounty on lead. The two districts above named are responsible for more than 75 per cent of the production, the balance having been produced in all other parts of the province.

TABLE 14.
PRECIOUS METALS.
SILVER :—BRITISH COLUMBIA.—PRODUCTION BY DISTRICTS.

District.	1901.	1902.	1903.	1904.
	Ounces.	Ounces.	Ounces.	Ounces.
Cariboo.....		4		
Cassiar.....	82	224	53	185
Kootenay East—				
Fort Steele division.....	718,451	114,506	28,537	590,186
Other divisions.....	34,181	27,918	59,006	20,964
Kootenay West—				
Ainsworth division.....	324,913	320,719	108,678	90,004
Nelson ".....	377,167	273,870	190,003	198,795
Slocan ".....	2,276,259	2,223,810	1,466,931	1,540,170
Trail Creek ".....	970,460	373,101	209,537	181,830
Other divisions.....	133,774	241,584	392,354	148,201
Lillooet.....			12	
Yale—				
Osoyoos division.....	241,489	219,798	320,749	245,155
Yale.....	74	542	15	625
Coast and other districts.....	74,483	121,841	220,329	206,366
Totals.....	5,151,333	3,917,917	2,996,204	3,222,481

NET PRODUCTION, PER SMELTER RETURNS, OF THE SLOCAN MINES.

Year.	Ore, Tons, 2,000 lb.	Silver oz.	Lead, lbs.	Gold, oz.	Values.
1895.....	9,514	1,122,770	9,666,324	6	\$1,045,600
1896.....	16,560	1,954,258	18,175,074	152	1,854,011
1897.....	33,567	3,641,287	30,707,705	193	3,280,686
1898.....	30,691	3,068,648	27,063,595	60	2,619,852
1899.....	21,507	1,891,025	16,660,910	14	1,740,372
1900.....	25,520	2,121,176	19,365,743	5	2,063,908
1901.....	25,493	2,276,259	15,025,759	244	1,865,752
1902.....	21,153	2,223,810	13,651,144	353	1,608,827
1903.....	12,412	1,466,931	9,880,469	257	1,126,986
1904.....	70,296	1,540,170	10,611,227	160	1,236,858
Total.....	266,713	21,306,334	170,807,950	1,444	18,442,852

SESSIONAL PAPER No. 26a

AVERAGE YIELD PER TON.

PRECIOUS
METALS.

Year.	Silver.	Lead.	Values.
1895.....	118·0 oz.	50·8%	\$109.90
1896.....	118·0 "	54·9%	111.95
1897.....	108·5 "	45·7%	97.73
1898.....	100·0 "	44·1%	85.36
1899.....	87·9 "	38·7%	80.92
1900.....	83·1 "	37·9%	80.87
1901.....	89·3 "	29·5%	73.19
1902.....	105·1 "	32·3%	76.06
1903.....	118·2 "	39·8%	90.80
1904.....	21·9 "	7·5%	17.59
	79·8 oz.	32·0%	\$ 69.14

ONTARIO.

In this province a new silver district has just been discovered and opened out. It is responsible for practically the total output of silver of Ontario. This is in the township of Coleman, on the line of the Timiskaming and Northern Ontario Railway, and on the west side of Lake Timiskaming. The deposits of the district contain silver, nickel, cobalt and arsenic. They are connected with rocks of Huronian age. As to the activity now prevailing in the district, the report of the Ontario Bureau of Mines says: "All the silver produced in 1904 came from the mines of Coleman township, save a small quantity extracted from the Sudbury, nickel-copper mattes. The output was 206,875 ounces, valued at \$111,887. The producing properties were the Larose, owned by Messrs Timmins, Dunlap and McMartin; the Chambers-Ferland properties including Cobalt Hill and the Little Silver Mine now owned by the Nipissing Mining Company, Limited, New York, of which Mr. Ellis P. Earle is the head; the New Ontario owned by Mr. W. G. Trethewey of Toronto; and the McKinley-Darragh, of which Messrs Gorman and Company of Ottawa, otherwise the Cobalt and Silver Mining Company, are proprietors. The ore was all sold to Mr. E. P. Earle and delivered to him at New York. Some of the shipments carried very high values, several 20 ton car lots netting as much as \$37,000 or \$38,000, the main returns being from the silver, though the other constituents, cobalt, nickel and arsenic each contributed to the result.....

"The new camp enjoys first-rate shipping facilities, since the Timiskaming and Northern Ontario Railway runs directly through it and a station called Cobalt has been established on the shore of a lake of the same name within easy distance of the chief producing properties. The freight rate from Cobalt to New York is \$7 per ton."

PRECIOUS
METALS.

In the Yukon Territory, the silver is recovered from the placer gold, which contains an appreciable proportion of it.

The silver of the province of Quebec is derived mostly from the treatment of the pyritous ores of the Eastern Townships.

The exports of silver ores from the whole of Canada as given in the Customs returns will be found in the subjoined table.

TABLE 15.

PRECIOUS METALS.

SILVER.—EXPORTS OF ORE.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$ 25,957	1896.....	\$ 2,271,959
1887.....	206,284	1897.....	3,576,391
1888.....	219,008	1898.....	2,902,277
1889.....	212,163	1899.....	1,623,905
1890.....	204,142	1900.....	2,341,872
1891.....	225,312	1901.....	2,026,727
1892.....	56,688	1902.....	1,820,058
1893.....	213,695	1903.....	1,989,474
1894.....	359,731	1904.....	1,904,394
1895.....	994,354		

COPPER.

There are but few mines in Canada where ores are worked solely for their copper contents. The production is almost altogether obtained from ores which are worked also on account of their values in nickel, sulphur, the precious metals, etc. In Quebec the copper is derived from the pyrites deposits near Sherbrooke which are primarily mined for the manufacture of sulphuric acid. The production in Ontario is practically represented by the copper contents of the nickel-copper ores of the Sudbury district, whilst in British Columbia the metal is obtained from ores which although low grade for copper are workable on account of carrying values in the precious metals.

The figures of production for 1904 are to be found in table No. 1, following, from which it will be seen that the steady increase in the general production of the past number of years has received a slight

SESSIONAL PAPER No. 26a

check, there being a decrease to record of 1,300,732 lbs. in the quantity COPPER. and of \$342,852 in the value.*

By references to tables 5, 6, 7 it will be seen that the responsibility for this decrease rests with the Eastern Canadian districts, Quebec and Ontario both showing considerable decreases as against an increase in British Columbia.

The production by Provinces was as follows:—

Quebec.....	760,000 lbs.
Ontario.....	4,913,594 "
British Columbia	35,710,128 "
Total.....	41,383,722 "

The great preponderance of British Columbia as a contributor to the total Canadian production of this metal is very apparent from the above figures. During 1904, the western province has to its credit over 86 per cent of the whole, whereas about ten years since its product was a little over one-tenth of the present figure and about equalled the output of Ontario.

The relationship of the provinces can be seen by reference to the figures in tables 5-6-7.

It is seen that Quebec has been dwindling ever since 1891. Ontario has shown no considerable fluctuations but has averaged distinctly upwards, whilst British Columbia, beginning at almost nothing in 1894, shows a phenomenal increase in the production, and, rapidly increasing, becomes the predominant feature in the industry since 1899.

* In order to state the production in terms of its money value so as to enable comparison to be made, one year with another for a long period of years, the final market values of the metal in the shipments of ore, matte, etc., are still adopted for the general tables. This is the first and only fixed definite datum line to which all the varying metal-bearing products of different years and different districts, can be referred, and this method of valuation is the only one which can be stated in terms of value so as to show the fluctuations in the industry and other features of its history. In different districts and at different times the practice is apt to vary in regard to the point to which are carried the processes of the extraction of the useful constituents of the raw ores, etc. so that spot values are too diverse and changeable locally to be added together getting at grand totals.

COPPER.

COPPER.

TABLE I.

ANNUAL PRODUCTION.*

Calendar Year.	Lbs.	Increase or Decrease.		Value.	Increase or Decrease.		Average Price per Pound.
		Lbs.	%		\$	%	
				\$			Cts
1886.....	3,505,000			385,550			11·00
1887.....	3,260,424	244,576	6·99	366,798	18,752	4·86	11·25
1888.....	5,562,864	<u>2,302,440</u>	<u>70·60</u>	927,107	<u>560,309</u>	<u>152·70</u>	<u>16·66</u>
1889.....	6,809,752	<u>1,246,888</u>	<u>22·40</u>	936,341	<u>9,234</u>	<u>0·99</u>	<u>13·75</u>
1890.....	6,013,671	796,081	11·69	947,153	10,812	1·15	15·75
1891.....	9,529,401	<u>3,515,730</u>	<u>58·46</u>	1,226,703	<u>279,550</u>	<u>29·51</u>	<u>12·87</u>
1892.....	7,087,275	2,442,126	25·63	818,580	408,123	33·27	11·55
1893.....	8,109,856	<u>1,022,381</u>	<u>14·40</u>	871,809	<u>53,229</u>	<u>6·50</u>	<u>10·75</u>
1894.....	7,708,789	401,067	4·94	736,960	134,849	15·46	9·56
1895.....	7,771,639	<u>62,850</u>	<u>·81</u>	836,228	<u>99,268</u>	<u>13·47</u>	<u>10·76</u>
1896.....	9,393,012	<u>1,621,373</u>	<u>20·86</u>	1,021,960	<u>185,732</u>	<u>22·21</u>	<u>10·88</u>
1897.....	13,300,802	<u>3,907,790</u>	<u>41·60</u>	1,501,660	<u>479,700</u>	<u>46·94</u>	<u>11·29</u>
1898.....	17,747,136	<u>4,446,334</u>	<u>33·43</u>	2,134,980	<u>633,320</u>	<u>42·17</u>	<u>12·03</u>
1899.....	15,078,475	2,668,661	15·04	2,655,319	520,339	24·37	17·61
1900.....	18,937,138	<u>3,858,663</u>	<u>25·59</u>	3,065,922	<u>410,603</u>	<u>15·46</u>	<u>16·19</u>
1901.....	37,827,019	<u>18,889,881</u>	<u>99·75</u>	6,096,581	<u>3,030,659</u>	<u>98·84</u>	<u>16·117</u>
1902.....	38,804,259	<u>977,240</u>	<u>2·58</u>	4,511,383	1,585,198	26·00	11·626
1903.....	42,684,454	<u>3,880,195</u>	<u>10·00</u>	5,649,487	<u>1,138,104</u>	<u>25·23</u>	<u>13·235</u>
1904.....	41,383,722	1,300,732	3·05	5,306,635	342,852	6·07	12·823

* The production is altogether represented by the copper contained in ore, matte, &c., produced and shipped valued at the average market price for the year for fine copper in New York.

Note.—In the above table, increases are shown underlined, and decreases in the ordinary way.

TABLE 2.

COPPER.

COPPER.

EXPORTS OF COPPER IN ORE, MATTE, ETC. :

Calendar Year.	Pounds.	Value.
		\$
1885.....		262,600
1886.....		249,259
1887.....		137,966
1888.....		257,260
1889.....		168,457
1890.....		398,497
1891.....		348,104
1892.....		277,632
1893.....	4,792,201	269,160
1894.....	1,625,389	91,917
1895.....	3,742,352	236,965
1896.....	5,462,052	281,070
1897.....	14,022,610	850,336
1898.....	11,572,381	840,243
1899.....	11,371,766	1,199,908
1900.....	23,631,523	1,741,885
1901.....	32,488,872	3,404,908
1902.....	26,094,498	2,476,516
1903.....	38,364,676	3,873,827
1904.....	38,553,282	4,216,214

TABLE 3.

COPPER.

IMPORTS OF PIGS, OLD, SCRAP, ETC.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	31,900	2,130	1892.....	343,600	14,894
1881.....	9,800	1,157	1893.....	168,300	16,331
1882.....	20,200	1,984	1894.....	101,200	7,397
1883.....	124,500	20,273	1895.....	72,062	6,770
1884.....	46,200	3,180	1896.....	86,905	9,226
1885.....	28,600	2,016	1897.....	49,000	5,449
1886.....	82,000	6,969	1898.....	1,050,000	80,000
1887.....	40,100	2,507	1899.....	1,655,000	246,740
1888.....	32,300	2,322	1900.....	1,144,000	180,990
1889.....	32,300	3,288	1901.....	951,500	152,274
1890.....	112,200	11,521	1902.....	1,767,200	225,832
1891.....	107,800	10,452	1903.....	2,038,400	252,594
1904 { Copper, old and scrap or in blocks .....Duty free Copper in pigs or ingots.....				309,300	33,597
				1,806,000	236,718
Total, 1904.....				2,115,300	270,315

COPPER.

TABLE 4.

COPPER.

IMPORTS OF MANUFACTURES.

Fiscal Year.		Value.		
		\$		
1880		123,061		
1881		159,163		
1882		220,235		
1883		247,141		
1884		134,534		
1885		181,469		
1886		219,420		
1887		325,365		
1888		303,459		
1889		402,216		
1890		472,668		
1891		563,522		
1892		422,870		
1893		458,715		
1894		175,404		
1895		251,615		
1896		285,220		
1897		264,587		
1898		786,529		
1899		551,586		
1900		1,090,280		
1901		951,045		
1902		1,281,522		
1903		1,291,635		
1904.	Copper in bolts, bars and rods, in coils, or otherwise in lengths not less than 6 feet, unmanufactured	Duty. Free.	Pounds. 5,632,400	\$ 749,498
	Copper, in strips, sheets or plates, not planished or coated, &c	"	1,861,000	296,914
	Copper tubing in lengths not less than 6 feet, and not polished, bent or otherwise manufactured	"	195,836	44,909
	Copper rollers, for use in calico printing, imported by calico printers for use in their own factories.	"		2,862
	Copper and manufactures of:—			
	Nails, tacks, rivets and burrs or washers.	30 p. c.		3,879
	Wire, plain, tinned or plated.	15 "	141,490	25,263
	Wire cloth, &c.	25 "		1,033
	All other manufactures of, N.O.P.	30 "		67,252
Total				1,191,610

QUEBEC.

Owing to the pyritous ores mined in this province carrying a small percentage of copper, there is a production to report, the figures relating to which will be found in table 5 below. The ore is primarily used in the manufacture of acid chiefly at works in the United States, although some is thus utilized in Canada. The residues

SESSIONAL PAPER No. 26a

left after burning the pyrites are treated in the United States for the COPPER extraction of copper, etc.

TABLE 5,
COPPER.
QUEBEC :—PRODUCTION.

Calendar Year.	Pounds.	Value.
		\$
1886.....	3,340,000	367,400
1887.	2,937,900	330,514
1888.....	5,562,864	927,107
1889.	5,315,000	730,813
1890.....	4,710,606	741,920
1891.....	5,401,704	695,469
1892.....	4,883,480	564,042
1893.....	4,468,352	480,348
1894.....	2,176,430	208,067
1895.....	2,242,462	241,288
1896.....	2,407,200	261,903
1897.....	2,474,970	279,424
1898.....	2,100,235	252,658
1899.....	1,632,560	287,494
1900.....	2,220,000	359,418
1901.....	1,527,442	246,178
1902.	1,640,000	190,666
1903.....	1,152,000	152,467
1904	760,000	97,455

ONTARIO.

In Ontario the production is practically that resulting from the working of the nickel-copper deposits of the Sudbury districts. The product of working these pyrrhotite-chalcopyrite deposits is exported in the shape of nickel-copper high grade matte, no metallic products resulting from the smelting process.

COPPER.

Outside of the operations above mentioned, shipments of ore were made from a few smaller mines operating at different points in the province.

TABLE 6.

COPPER.

ONTARIO :—PRODUCTION.

Calendar Year.	Pounds.	Value.
		\$
1886.....	165,000	18,150
1887.....	322,524	36,284
1888.....		
1889.....	1,466,752	201,678
1890.....	1,303,065	205,233
1891.....	4,127,697	531,234
1892.....	2,203,795	254,538
1893.....	3,641,504	391,461
1894.....	5,207,679	497,854
1895.....	4,576,337	492,414
1896.....	3,167,256	344,598
1897.....	5,500,652	621,023
1898.....	8,375,223	1,007,539
1899.....	5,723,324	1,007,877
1900.....	6,740,058	1,091,215
1901.....	8,695,831	1,401,507
1902.....	7,408,202	861,278
1903.....	7,172,533	949,285
1904.....	4,913,594	630,070

BRITISH COLUMBIA.

The mining of copper-bearing ores in this province has been prosecuted with ever increasing success for the past ten years. In that period the production has enlarged from 324,680 lbs. to 35,710,128 lbs. or considerably over ten times. Examination of table 7 will show that although the rate of increase has been very variable, every year of the period has shown a most encouraging growth in the industry.

The ores are chiefly sulphurets carrying values in the precious metals. The chief contributing districts are Boundary Camp with an average percentage of copper for 1904 of 1.38 per cent, the Rossland Camp with an average percentage of copper of 1.14 per cent and the Coast districts with an average content of copper of 3.68 per cent.

TABLE 7.

COPPER.

COPPER.

BRITISH COLUMBIA—PRODUCTION.

Calendar Year.	Copper contained in ores, matte, &c.	Increase.		Value.
		Lb.	%	
1894	324,680	.....	.....	\$ 31,039
1895	952,840	628,160	193	102,526
1896	3,818,556	2,865,716	301	415,459
1897	5,325,180	1,506,624	39	601,213
1898	7,271,678	1,946,498	36	874,783
1899	7,722,591	450,913	6	1,359,948
1900	9,977,080	2,254,489	29	1,615,289
1901	27,603,746	17,626,666	177	4,448,896
1902	29,636,057	2,032,311	7	3,445,488
1903	34,359,921	4,723,864	16	4,547,735
1904	35,710,128	1,350,207	4	4,579,110

TABLE 8.

COPPER.

BRITISH COLUMBIA—PRODUCTION BY DISTRICTS.

	1901.	1902.	1903.	1904.
	Pounds.	Pounds.	Pounds.	Pounds.
Cassiar .....	.....	6,258	2,249	8,900
East Kootenay	3,272	8,048	2,730	5,472
West Kootenay—				
Ainsworth .....	.....	9,537	.....	.....
Nelson	1,599,449	491,144	346,218	220,500
Slocan .....	.....	.....	181	.....
Trail Creek	8,333,446	11,667,807	8,652,127	7,119,876
All other .....	.....	1,000	3,294	.....
Yale—				
Boundary	14,511,787	14,955,582	18,485,542	22,066,407
Ashcroft, Kamloops	39,920	.....	6,409	328,380
Coast districts	3,115,872	2,496,681	6,861,171	5,960,593
	27,603,746	29,636,057	34,359,921	35,710,128

There are a number of smelters in the province treating the mixed ores of the various districts. At the Trail smelter is produced a matte running from 50 to 55 per cent in copper. This is sent to the Tacoma smelter, where it is further treated, yielding a matte carrying about 98 per cent of the metal. This blister copper is then shipped to eastern refineries.

COPPER.

At the Northport smelter high grade matte is produced, which goes to New York for bessemerizing and refining. The blister copper (99 per cent) product of the Granby smelter is also shipped east for refining. At the Greenwood smelter since the recent installation of the bessemerizing plant blister copper nearly 99 per cent is produced in place of 45 per cent matte as formerly.

IRON.

IRON

Iron Ore.—The Canadian production of iron ore for 1904 totalled 219,046 tons instead of 264,294 tons as compared with 1903. For this decrease of 45,248 tons, Ontario is almost wholly responsible, as Nova Scotia and Quebec show increases. On the other hand no production is recorded for British Columbia, but this last province has always been a small and desultory producer.

NOVA SCOTIA.

The production of iron ore in Nova Scotia is almost entirely due to the operations of the Londonderry Iron and Mining Company who are working several deposits of hematite and of carbonates of iron in Colchester county and one at Torbrook, Annapolis county. This last deposit has been described by Mr. H. Fletcher in our Summary Report for 1904.

QUEBEC.

The main source of iron ore of this province is at present the deposits of bog iron ore which are found in the counties of St. Maurice, Champlain, Joliette, Vaudreuil, and Nicolet. The ore is treated at Radnor Forges and at Drummondville.

ONTARIO.

This province is the most important iron ore producer of the Dominion. The decrease which we have to record this year is due to the temporary cessation in operations of the Sault Ste. Marie industries who were working the Helen Mine in the Michipicoten District. A few other mines working on smaller scales gave returns of production. But prospecting and development work in iron-bearing regions were very active all the year round. The districts which received special attention are the Timiskaming, Temagami, the Hutton, the Atikokan and the Michipicoten regions; a company is said to be contemplating the erection of a blast furnace at Port Arthur, for smelting the ores of the Atikokan range.

SESSIONAL PAPER No. 26a

BRITISH COLUMBIA.

There are numerous deposits of iron ore in this province but the Iron. production has always been irregular and desultory. It has been mined mainly as a flux for lead smelting operations. This province possesses features very favourable to the establishment of an iron industry. Systematic work on the known iron deposits would probably reveal large bodies, and there are several large fields of excellent coal. No production of iron ore is recorded this year.

TABLE 1.

IRON.

PRODUCTION OF ORE BY PROVINCES.

Calendar Year.	Nova Scotia.	Quebec.	Ontario.	British Columbia.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.
1886.....	44,388	.....	16,032	3,941	64,361
1887.....	43,532	13,401	16,598	2,796	76,330
1888.....	42,611	10,710	16,894	8,372	78,587
1889.....	54,161	14,533	.....	15,487	84,181
1890.....	49,206	22,305	.....	.....	76,511
1891.....	53,649	14,380	.....	950	68,979
1892.....	78,258	22,690	.....	2,300	103,248
1893.....	102,201	22,076	.....	1,325	125,602
1894.....	89,379	19,492	.....	1,120	109,991
1895.....	83,792	17,783	.....	1,222	102,797
1896.....	58,810	17,630	15,270	196	91,906
1897.....	23,400	22,436	2,770	2,099	50,705
1898.....	19,079	17,873	21,111	280	58,343
1899.....	28,000	19,420	25,126	2,071	74,617
1900.....	18,940	19,000	82,950	1,110	122,000
1901.....	18,619	15,489	272,538	7,000	313,646
1902.....	16,172	18,524	359,288	10,019	404,003
1903.....	40,335	12,035	209,634	2,290	264,294
1904.....	61,293	16,152	141,601	.....	219,046

TABLE 2.

IRON.

NOVA SCOTIA:—ANNUAL PRODUCTION OF ORE.

(Previous to 1886).

Calendar Year.	Tons.	Calendar Year.	Tons.
1876.....	15,274	1881.....	39,843
1877.....	16,879	1882.....	42,135
1878.....	36,600	1883.....	52,410
1879.....	29,889	1884.....	54,885
1880.....	51,193	1885.....	48,129

IRON.

TABLE 3.

IRON.

EXPORTS OF IRON ORE.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			
1893.....	2,419	7,590	1899.....	4,145	9,538
1894.....		21,294	1900.....	5,527	13,511
1895.....	1,571	3,909	1901*.....	306,199	762,283
1896.....	1,033	1,911	1902*.....	428,901	1,065,019
1897.....	403	811	1903*.....	368,233	922,571
1898.....	182	278	1904*.....	168,828	401,738

*The export figures for the last four years are incorrect owing to a duplication of entries.

TABLE 4.

IRON.

EXPORTS OF IRON ORE.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1879.....	3,562	7,530	1892.....	7,707	36,935
1880.....	30,524	76,474	1893.....	7,811	26,114
1881.....	44,677	114,850	1894.....	1,859	9,026
1882.....	43,835	135,463	1895.....	2,315	5,743
1883.....	44,914	138,775	1896.....	14	35
1884.....	25,308	66,549	1897.....	1,320	2,492
1885.....	54,367	132,074	1898.....	260	402
1886.....	7,542	23,039	1899.....	1,849	4,968
1887.....	23,345	71,934	1900.....	4,327	7,689
1888.....	13,544	39,945	1901*.....	58,401	150,657
1889.....	24,752	60,289	1902*.....	525,983	1,303,901
1890.....	13,811	31,376	1903*.....	293,510	733,230
1891.....	14,648	32,582	1904*.....	233,850	579,883

*See foot note to table 3, also table 4a, and remarks.

TABLE 4a.

IRON.

IRON.

IMPORTS OF IRON ORE INTO THE UNITED STATES FROM CANADA.*

Year ending June 30.	Tons.	Year ending June 30.	Tons.
1893.	6,880	1899.	2,308
1894.	269	1900.	3,997
1895.	2,394	1901.	30,762
1896.	35	1902.	276,363
1897.	2,263	1903.	129,219
1898.	1,172	1904.	113,388

* Compiled from the "Foreign Commerce and Navigation of the United States."

In referring to table 3, which is made up from the Customs returns, it will be noticed that the figures of exports of iron ore for the last few years are very large as compared with the figures of production. Practically all the exports of ore are into the United States and a comparison of tables 3-4 and 4a shows wide discrepancies. This has been found to be due to an error in the Canadian returns, resulting from a duplication in export entries. The great bulk of the foreign ore consumed comes from Newfoundland and from the United States lake districts. Small quantities are also imported from Cuba, Spain and Sweden.

Pig Iron.—The total quantity of pig iron shows a slight increase over the 1903 production, although the total value has decreased. Table 5 gives as full a presentment as possible in a tabular form, of the details of the industry, giving separately the proportion of Canadian ore used, the various kinds of fuel employed, &c.

IRON.

TABLE 5.
IRON.
Pig Iron Production : Consumption of Ore, Fuel, &c.

CALENDAR YEAR.	IRON ORE CONSUMED.			FUEL CONSUMED.				FLUX CONSUMED.			PIG IRON MADE.			
	Tons.	Value.	Bushels.	Charcoal.		Coke.		Coal.		Tons.	Value.	Tons.	Value.	Value per ton.
					Value.	Tons.	Value.	Tons.	Value.					
1887.....	60,434	\$ 130,808	940,400	\$ 48,593	30,248	\$ 89,123	3,333	\$ 5,877	17,171	\$ 17,500	24,827	\$ 366,192	\$ 14.75	
1888.....	54,956	102,343	804,286	41,800	28,031	82,986	2,197	4,709	16,857	16,533	21,799	313,235	14.37	
1889.....	65,670	126,064	755,800	41,568	33,289	94,791	3,044	6,525	22,122	21,909	25,921	499,872	19.28	
1890.....	57,304	117,880	589,860	29,493	32,832	97,659	1,241	2,638	18,478	18,361	21,772	331,688	15.23	
1891.....	60,935	130,955	441,812	22,091	30,626	98,402	2,170	2,868	11,377	11,546	23,891	368,901	15.44	
1892.....	96,945	250,966	1,121,365	78,291	50,882	152,311	1,740	1,737	22,967	22,967	42,443	637,421	15.02	
1893.....	124,053	296,979	1,302,720	90,376	58,711	163,849	6,621	13,539	27,797	27,519	55,947	790,283	14.13	
1894.....	108,871	223,861	1,173,970	53,958	52,373	142,303	7,653	14,571	35,101	34,347	49,967	646,447	12.94	
1895.....	93,208	218,336	789,561	31,582	48,540	139,475	3,089	5,396	31,585	29,922	42,454	586,736	13.82	
1896.....	96,560	200,887	756,600	32,256	(a) 48,660	106,939	(a) 1,407	2,288	37,462	36,140	67,268	924,129	13.74	
1897.....	(a) 46,300	100,205	(a) 33,990	109,253	(b) 35,800	71,600	(b) 27,810	94,553	31,273	30,258	58,007	738,701	12.73	
1898.....	(a) 53,658	131,705	(a) 1,031,800	43,230	(b) 31,952	63,904	(a) 50,407	158,783	33,913	31,153	77,015	912,395	11.85	
1899.....	(a) 57,881	151,760	836,400	41,820	(a) 44,844	134,532	(a) 64,648	193,944	51,826	44,286	102,940	1,377,306	13.38	
1900.....	(a) 66,384	216,322	1,928,025	87,858	(a) 45,021	180,084	(a) 59,345	255,892	52,906	39,332	96,575	1,501,698	15.55	
1901.....	(a) 71,341	184,191	1,799,737	82,408	(a) 205,796	539,328	(a) 115,367	497,886	169,399	183,162	274,376	3,512,923	12.80	
1902.....	(a) 113,042	351,382	1,835,736	100,978	(a) 300,593	898,518	(a) 112,314	494,433	293,594	219,295	357,902	4,243,541	11.85	
1903.....	(a) 156,613	544,144	(a) 846,398	846,398	(a) 350,190	819,016	(a) 96,540	556,091	277,452	249,251	297,885	3,742,710	12.56	
1904.....	(a) 361,010	846,398	2,146,623	118,275	(a) 257,182	729,585	(a) 130,210	551,445	211,278	177,595	303,454	3,687,985	12.15	
1905.....	(a) 125,664	429,753	2,322,030	152,717	(a) 180,932	489,687	(a) 464,671	922,594						
1906.....	(a) 159,381	964,979	3,477,470	191,404										
1907.....	(a) 82,035	247,229												
1908.....	(a) 485,911	823,147												
1909.....	(a) 180,932	489,687												
1910.....	(a) 464,671	922,594												
1911.....	(a) Canadian.	(b) Imported.												

(a) Canadian. (b) Imported.

SESSIONAL PAPER No. 26a

In the tabulated statement showing the mineral production of Canada, the production of pig iron from Canadian ore only is given. These figures have been arrived at by separating the total production at each furnace into two classes, viz.: pig iron from Canadian ore, and pig iron from imported ore, the separation being made on the basis of the Canadian and imported ore entering into the production of pig iron at each respective furnace.

The production for the past eight years separated in this way has been as follows :—

Calendar Year.	Pig iron from Canadian ore.	Pig iron from Imported ore.
	Tons.	Tons.
1896.....	40,720	26,548
1897.....	26,200	31,807
1898.....	30,553	46,462
1899.....	34,244	68,699
1900.....	35,387	61,188
1901.....	83,100	191,276
1903.....	71,664	286,238
1903....	42,052	255,833
1904.....	68,297	235,157

During the year there were ten furnaces in blast for varying periods, operated by the following companies :—

Dominion Iron and Steel Company, Sydney, C.B.—Furnace plant at Sydney.

Nova Scotia Steel and Coal Company, New Glasgow, N.S.—Furnace plant at Ferrona, N.S. New blast furnace being erected at Sydney Mines, C.B.

Londonderry Iron and Mining Co., Ltd., Londonderry, N.S.—Furnace plant at Londonderry.

Canada Iron Furnace Co., Montreal, Que.—Furnace plants at Radnor Forges, Que., and at Midland, Ont.

John McDougall and Co., Montreal, Que.—Furnace plant at Drummondville, Que.

Deseronto Iron Co., Deseronto, Ont.—Furnace plant at Deseronto, Ont.

Hamilton Steel and Iron Co., Hamilton, Ont.—Furnace near Hamilton, Ont.

The Algoma Steel Co. Ltd.,—Sault Ste. Marie, Ont.—Furnace plant at Steelton, Ont., near Sault Ste. Marie.

IRON

The statistics of the production of steel, and of rolled iron and steel, in Canada as well as in the United States, are admirably presented in the Annual Statistical Report of the American Iron and Steel Association, and the following information concerning the production of steel and rolled iron and steel in Canada is taken from the above-mentioned report for 1904.

"The total production of steel ingots and castings in Canada in 1904 was 148,784 gross tons, against 181,514 tons in 1903, a decrease of 32,730 tons. Bessemer and open-hearth steel ingots and castings were made in each year. Almost all the open-hearth steel reported in 1903 and 1904 was made by the basic process. The direct steel castings made in 1904 amounted to 6,505 tons. Canada has not made crucible steel prior to the present year?

"The following table gives the production of all kinds of steel ingots and castings in Canada from 1894 to 1904, in gross tons.

Years.	Gross Tons.
1894.....	25,685
1895.....	17,000
1896.....	16,000
1897.....	18,400
1898.....	21,540
1899.....	22,000
1900.....	23,577
1901.....	26,084
1902.....	182,037
1903.....	181,514
1904.....	148,784

Production of rolled iron and steel, in Canada.

"The following table gives the production of all kinds of iron and steel rolled into finished forms in Canada from 1895 to 1904.

Years.	Gross Tons.
1895.....	66,402
1896.....	75,043
1897.....	77,021
1898.....	90,303
1899.....	110,642
1900.....	100,690
1901.....	112,007
1902.....	161,485
1903.....	129,516
1904.....	130,038

SESSIONAL PAPER No. 26a

"The production of Bessemer and open-hearth steel rails in 1904^{Iron.} amounted to 36,216 gross tons, against 1,243 tons in 1903 ; structural shapes, 447 tons, against 1,983 tons in 1903 ; cut nails made by rolling mills and steel works having cut-nail factories connected with their plants, 99,000 kegs of 100 lbs. against 118,686 kegs in 1903 ; plates and sheets 3,102 tons, against 2,450 tons in 1903 ; all other finished rolled products, excluding muck and scrap bars, blooms, billets, sheet bars and other unfinished forms, 135,243 tons, against 118,541 tons in 1903.

"The total quantity of all kinds of iron and steel rolled into finished forms in Canada in 1904 amounted to 180,038 tons, against 129,516 tons in 1903. Of the 180,038 tons of finished iron and steel reported for 1904, about 126,850 tons were rolled from steel and 53,188 tons from iron.

"On December 31, 1904, there were eighteen completed rolling mills and steel works in Canada. In addition, three plants were being built and two plants were projected. Of the completed plants, two were equipped for the manufacture of steel castings only, five for the manufacture of Bessemer or open-hearth steel ingots and rolled products, and eleven for the manufacture of rolled products only. Of the building plants, one was being equipped for the manufacture of steel castings by a special process, one for the manufacture of open-hearth steel ingots only, and one for the manufacture of merchant bar-iron, railway spikes, &c. One of the projected plants is to be equipped for the manufacture of skelp and bar-iron and the other for the manufacture of wire rods.

"Of the eighteen completed rolling mills and steel works in Canada on December 31, 1904, three were located in Nova Scotia, five in Quebec, nine in Ontario and one in New Brunswick. The building plants are in Nova Scotia, Ontario and Manitoba, and the projected plants are in Ontario."

Bounties.—Bounties on iron and steel made in Canada, were provided for by the Dominion Government in 1897 (Chapter 6 of Statutes of Canada, 1897). This Act was amended in 1899 (chapter 8, Statutes of Canada, 1899) and again in 1903 (Chapter 68, Statutes of Canada, 1903).

The payment by the Dominion Government on account of iron and steel bounties during the fiscal year ending June 30, 1904, were as

IRON.

follows, the figures having been compiled from the Auditor General's report for 1904 :—

BOUNTIES ON PIG IRON, FISCAL YEAR 1904.

Company.	On Pig Iron from Canadian Ore.		On Pig Iron from Imported Ore.		Total Bounties.
	Tons.	Bounties.	Tons.	Bounties.	
		\$ cts.		\$ cts.	\$ cts.
Canada Iron Furnace Co., Ltd.—					
Midland, Ont.	8,766.66	23,670.06	25,392.22	45,706.01	69,376.07
Radnor Forges, Que.	5,195.95	14,029.07	1,944.26	3,499.62	17,528.69
Deseronto Iron Co.	498.00	1,344.60	9,480.00	17,064.00	18,468.60
Dominion Iron and Steel Co. Electric Reduction Co., Ltd., Buckingham, Que. .	270.38	730.02	129,334.28	232,801.72	232,801.72
Hamilton Steel & Iron Co. .	18,907.45	51,050.10	32,546.82	58,584.25	109,634.35
John McDougall & Co.	1,862.68	5,029.09			5,029.09
Londonderry Iron & Mining Co., Ltd.	10,617.25	28,666.58			28,666.58
Nova Scotia Steel & Coal Co., Ltd.	326.74	882.16	28,291.59	50,924.87	51,807.03
	46,445.06	125,401.68	226,989.17	408,580.47	533,982.15

BOUNTY ON PUDDLED IRON BARS.

Company.	Tons.	Bounty.
		\$ cts.
Hamilton Steel and Iron Co., Ltd.	4,321.86	11,668.99

BOUNTY ON STEEL INGOTS.

Company.	Tons.	Bounties.
		\$ cts.
Dominion Iron and Steel Co., Ltd.	85,742.37	231,504.38
Hamilton Steel and Iron Co., Ltd.	13,574.46	36,651.04
Nova Scotia Steel and Coal Co.	29,568.44	79,834.75
	128,885.27	347,990.17

SESSIONAL PAPER No. 26a

BOUNTIES ON ARTICLES MANUFACTURED FROM STEEL.

IRON.

Company.	Tons.	Bounties.
Dominion Iron and Steel Co., Ltd.—		\$ cts.
Rolled round steel wire rods.....	637 94	3,827 64
Hamilton Steel and Iron Co., Ltd.—		
Rolled angles.....	2,496 89	7,490 67
Montreal Rolling Mills Co.—		
Rolled round wire rods.....	257 50	1,545 00
Nova Scotia Steel and Coal Co., Ltd.—		
Rolled angles.....	794 07	} 2,457 54
Rolled plates.....	25 11	
	4,211 51	15,320 85

The following tables 6, 7, 8, 9, 10 and 11 illustrate the Canadian export and import trade of iron and steel products. They all cover the fiscal year ending June 30, 1904.

TABLE 6.

IRON.

EXPORTS OF IRON AND STEEL GOODS, THE PRODUCT OF CANADA.

Calendar Year 1904.	Quantity.	Value.
		\$
Stoves. No	1,366	17,642
Sewing machines. "	1,073	22,763
Typewriters..... "	4,240	130,115
Machinery, N.E.S..... \$		356,848
Hardware, N.E.S..... "		120,070
Steel and manufactures of .. "		332,932
Castings, N.E.S..... "		61,624
Scrap iron and steel..... Cwt	157,182	76,125
Pig iron Tons	21,016	200,363
Total.....		1,318,482

IRON.

TABLE 7.

IRON.

IMPORTS OF IRON, PIG, SCRAP, &c.

Fiscal Year.	Pig Iron.		Charcoal Pig Iron.		Old and Scrap Iron.		Wrought Scrap and Scrap Steel.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1880	(a) 23,159	371,956	.....	.....	928	14,042	.....	.....
1881	(a) 43,630	715,997	.....	.....	584	8,807	.....	.....
1882	56,594	811,221	6,837	211,791	1,327	20,406	.....	.....
1883	75,295	1,085,755	2,198	58,994	709	7,776	.....	.....
1884	49,291	653,708	2,893	66,602	3,136	44,223	.....	.....
1885	42,279	545,426	1,119	27,333	3,552	46,275	.....	.....
1886	42,463	528,483	3,185	60,086	10,151	158,100	.....	.....
1887	46,295	554,388	3,919	77,420	17,612	220,167	(b) 79	1,086
	Pig Iron, &c. (c)							
	Tons.	Value.						
		\$						
1888	48,973	648,012					23,293	297,496
1889	72,115	864,752					26,794	335,090
1890	87,613	1,148,078					47,846	678,574
1891	81,317	1,085,929					43,967	652,842
1892	68,918	886,485					32,627	433,695
	Pig Iron.		Charcoal Pig Iron.		Cast Scrap Iron.			
	Tons.	Value.	Tons.	Value.	Tons.	Value.		
		\$		\$		\$		
1893	56,849	682,209	5,944	84,358	729	9,317	45,459	574,809
1894	42,376	483,787	2,906	34,968	78	771	30,850	369,682
1895	(d) 31,637	341,259	2,780	31,171	643	4,347	23,390	244,388
1896	(d) 36,131	394,591	917	11,726	93	741	13,607	157,996
1897	(d) 25,766	291,788	2,936	35,373	238	1,362	7,903	93,541
1898	(d) 37,186	382,103	2,250	23,533	1,559	13,251	(e) 48,903	534,577
1899	(d) 44,261	452,911	(f) 1,955	19,123	(f) 2,378	22,594	(e) 28,352	301,268
1900	(d) 49,767	811,490	(f) 1,816	38,736	(f) 13,747	150,681	(e) 38,753	638,505
1901	(d) 35,293	548,033	(f) 490	7,121	(f) 4,499	51,032	(e) 24,773	242,189
1902	39,978	585,077	(f) 38	726	(f) 3,048	38,958	(e) 36,150	520,909
1903	91,730	1,338,574	882	16,352	(f) 7,137	94,028	(e) 43,115	670,402
1904	62,515	894,728	.....	.....	(f) 11,385	149,923	(e) 21,027	298,806

(a) Comprises pig-iron of all kinds.

(b) From May 13 only.

(c) These figures appear in Customs reports under heading 'Iron in pigs, Iron kentledge and cast scrap-iron.'

(d) Includes iron kentledge. Duty \$2.50 per ton.

(e) Scrap iron and scrap steel, old, and fit only to be remanufactured, being part of, or recovered from, any vessel wrecked in waters subject to the jurisdiction of Canada. Duty free.

Iron or steel scrap, wrought, being waste or refuse, including punchings, cuttings and clippings of iron or steel plates or sheets, having been in actual use, crop ends of tin plate bars, blooms and rails, the same not having been in actual use. Duty \$1 per ton.

(f) Duty \$2.50 per ton.

SESSIONAL PAPER No. 26a

TABLE 8.

IRON.

IRON.

IMPORTS OF FERRO-MANGANESE, &C.

Fiscal Year.	Tons.	Value.
*1887	123	\$ 1,435
*1888	1,883	29,812
*1889	5,868	72,108
*1890	696	18,895
*1891	2,707	40,711
*1892	1,311	23,930
*1893	529	15,858
*1894	284	9,885
†1895	164	5,408
†1896	652	12,811
†1897	426	9,233
†1898	1,418	22,516
†1899	1,160	22,539
†1900	1,149	39,064
†1901	1,512	38,954
†1902	6,513	150,977
†1903	6,350	162,710
†1904.....(Duty, 5 p.c.)	2,975	75,554

*These amounts include :—Ferro-manganese, ferro-silicon, spiegel, steel bloom ends, and crop ends of steel rails, for the manufacture of iron or steel.

†Ferro-silicon, spiegeleisen and ferro-manganese.

TABLE 9.

IRON.

IMPORTS : IRON IN SLABS, BLOOMS, LOOPS AND PUDDLED BARS, &C.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880	195,572	\$244,601	1892	64,397	\$ 56,186
1881	111,666	111,374	1893	65,269	58,533
1882	203,888	222,056	1894	50,891	45,018
1883	258,639	269,818	1895	78,639	67,321
1884	252,310	264,045	1896	128,535	110,757
1885	312,329	287,734	1897	56,560	48,954
1886	273,316	248,461	1898	162,891	122,426
1887	522,853	421,598	1899	124,311	103,198
1888	110,279	93,377	1900	255,145	362,463
1889	80,383	67,181	1901	234,925	206,975
1890	15,041	45,923	1902	401,306	419,543
1891	41,567	38,931	1903	394,418	380,034
			1904*	200,295	216,571

*Iron or steel ingots, cogged ingots, blooms, slabs, billets, puddled bars, and loops or other forms, N.O.P., less finished than iron or steel bars, but more advanced than pig-iron, except castings. Duty \$2 per ton.

IRON.

TABLE 10a.

IRON.

IMPORTS OF IRON AND STEEL GOODS.—1903-1904.

Fiscal Year, 1904.	Duty.	Quantity.	Value.
Bar iron or steel rolled, whether in coils, bundles, rods or bars, comprising rounds, ovals, squares and flats and rolled shapes, N.O.P. Cwt.	\$7 per ton.	646,439	1,024,256
Castings, iron or steel, in the rough, N.E.S. \$	25 %	.....	223,362
Canada plates, Russia iron, flat galvanized iron or steel sheets, terne plates and rolled sheets of iron or steel coated with zinc, spelter or other metal, of all widths or thicknesses, N.O.P. Cwt.	5 "	608,307	1,417,526
Iron or steel bridges or parts thereof, iron or steel structural work, columns, shapes or sections drilled, punched, or in any further stage of manufacture than as rolled or cast, N.E.S. "	55 "	53,046	147,369
Malleable iron castings and iron or steel castings, N.E.S. "	25 "	4,685	16,430
Mould boards, or shares or plough plates land sides and other plates for agricultural implements, cut to shape from rolled plates of steel but not moulded, punched, or otherwise manufactured "	5 "	48,096	168,815
Iron or steel railway bars or rails of any form, punched or not punched, N.E.S., for railways, which term for the purposes of this item shall include all kinds of railways, street railways and tramways, even although the same are used for private purposes only, and even although they are not used or intended to be used in connection with the business of common carrying of goods or passengers. Tons.	30 "	10,600	263,284
Railway fish-plates and tie plates. "	\$8 per ton.	7,000	208,246
Rolled iron or steel angles, tees, beams, channels, joists, girders, zeos, stars or rolled shapes, or trough, bridge, building, or structural rolled sections, or shapes not punched, drilled or further manufactured than rolled, N.E.S., and flat-eye-bar blanks not punched or drilled Cwt.	10 %	730,695	946,728
Rolled iron or steel hoop, band, scroll or strip, 8 inches or less in width, No. 18 gauge and thicker, N.E.S. "	\$7 per ton.	48,081	82,295
Rolled iron or steel hoop, band, scroll or strip, thinner than No. 18 gauge, N.E.S. "	5 %	38,125	71,807
Rolled iron or steel angles, tees, beams, channels, girders and other rolled shapes or sections, weighing less than 35 lbs. per lineal yard, not punched, drilled or further manufactured than rolled, N.O.P. "	\$7 per ton.	241,444	329,895
Rolled iron or steel plates or sheets, sheared or unsheared, and skelp iron or steel, sheared or rolled in grooves, N.E.S. "	\$7 "	197,062	305,670
Rolled iron or steel plates, not less than 30 inches in width and not less than $\frac{1}{4}$ inch in thickness, N.O.P. "	10 %	418,838	575,932
Carried forward. ....	.....	.....	5,781,615

SESSIONAL PAPER No. 26a

TABLE 10a—Continued.

IRON.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1904.	Duty.	Quantity.	Value.
			\$
Brought forward.....			5,781,615
Rolled iron or steel sheets No. 17 gauge and thinner, N.O.P..... Cwt.	5 p. c.	235,637	509,904
Rolls of chilled iron or steel..... "	30 "	3,771	11,658
Skelp iron or steel, sheared or rolled in grooves, imported by manufacturers of wrought iron or steel pipe for use only in the manufacture of wrought iron or steel pipe in their own factories..... "	5 "	382,544	557,944
Swedish rolled iron and Swedish rolled steel nail rods under half an inch in diameter for the manufacture of horse-shoe nails.. "	15 "	9,234	17,095
Switches, frogs, crossings and intersections for railways..... "	30 "	9,367	24,616
Steel—chrome steel..... "	15 "	2,106	18,796
Steel plate, universal mill or rolled edge bridge plates imported by manufacturers of bridges..... "	10 "	154,960	220,692
Steel in bars, bands, hoops, scroll or strips, sheets or plates, of any size, thickness or width when of greater value than 2½c. per lb., N.O.P. "	5 "	146,287	650,318
Iron or steel beams, sheets, plates, angles, knees and cable chains for wooden, iron, steel, or composite ships or vessels..... "	Free.	40,983	66,488
Locomotive and car wheel tires of steel, in the rough..... "	"	38,832	95,750
Steel for saws and straw cutters cut to shape, but not further manufactured.... "	"	13,845	115,669
Crucible sheet steel, 11 to 16 gauge, 2½ to 18 inches wide, imported by manufacturers of mower and reaper knives for manufacture of such knives in their own factories..... "	"	8,117	33,504
Steel of No. 20 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of corset steels, clock springs and shoe shanks imported by the manufacturers of such articles for the exclusive use in the manufacture thereof in their own factories..... "	"	1,648	5,853
Steel valued at 2½ cents per lb. and upward, imported by the manufacturers of skates, for use exclusively in the manufacture thereof in their own factories..... "	"	1,661	5,546
Steel, under ½-inch in diameter, or under ½ inch square, imported by the manufacturers of cutlery, or of knobs, or of locks, for use exclusively in the manufacture of such articles in their own factories..... "	"	2,499	6,377
Carried forward.....			8,121,825

IRON.

TABLE 10a—*Concluded.*

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1904.	Duty.	Quantity.	Value.
Brought forward.....			\$ 8,121,825
Steel, No. 12 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of buckle clasps, bed fasts, furniture casters and ice creepers, imported by the manufacturers of such articles, for use exclusively in the manufacture thereof in their own factories..... Cwt.	Free.	1,103	4,231
Steel of No. 24 and 17 gauge, in sheets sixty-three inches long, and from 18 inches to 32 inches wide, imported by the manufacturers of tubular bow sockets for use in the manufacture of such articles in their own factories..... "	"	743	1,900
Steel for the manufacture of bicycle chains, imported by the manufacturers of bicycle chain for use in the manufacture thereof in their own factories..... "	"	496	2,024
Steel for the manufacture of files, augers, auger bits, hammers, axes, hatchets, scythes, reaping hooks, hoes, hand rakes, hay or straw knives, windmills and agricultural or harvesting forks imported by the manufacturers of such or any of such articles for use exclusively in the manufacture thereof in their own factories.... "	"	73,953	162,511
Steel springs for the manufacture of surgical trusses imported by the manufacturers for use exclusively in the manufacture thereof in their own factories..... "	"	78	805
Flat spring steel, steel billets and steel axle bars, imported by manufacturers of carriage springs and carriage axles for use exclusively in the manufacture of springs and axles for carriages or vehicles other than railway or tramway, in their own factories.... "	"	81,968	132,871
Spiral spring steel for spiral springs for railways, imported by the manufacturers of railway springs for use exclusively in the manufacture of railway spiral springs in their own factories..... "	"	29,423	54,665
Malleable iron or steel castings, in the rough for the manufacture of scissors, and hand shears when imported by manufacturers of scissors and hand shears to be used in making such articles in their own factories, O.C..... "	"	69	929
Steel for the manufacture of cutlery when imported by manufacturers of cutlery to be used in their own factories in the manufacture of such article, O.C..... "	"	1,013	3,435
Total.....			8,485,196

SESSIONAL PAPER No. 26a

TABLE 10b.

IRON.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1904.		Duty.	Quantity.	Value.
				\$
Agricultural implements, N.E.S., viz:				
Cultivators and weeders	No.	20 %	2,682	12,468
Drills, grain seed	"	20 "	3,036	102,339
Farm, road or field rollers	"	25 "	110	4,897
Forks, pronged	"	25 "	7,788	6,325
Harrows	"	20 "	4,411	82,112
Harvesters, self binding	"	20 "	7,598	746,894
Hay tedders	"	25 "	1,148	27,439
Hoes	"	25 "	5,890	1,278
Horse rakes	"	20 "	9,042	173,044
Knives, hay or straw	"	25 "	499	220
Lawn mowers	"	35 "	4,023	14,682
Manure spreaders	"	20 "	229	16,603
Mowing machines	"	20 "	9,674	331,964
Ploughs	"	20 "	13,755	300,135
Post hole diggers	"	25 "	869	900
Potato diggers	"	25 "	187	1,245
Rakes, N.E.S.	"	25 "	6,620	1,278
Reapers	"	20 "	963	48,325
Scythes	Doz.	25 "	3,858	17,126
Sickles or reaping hooks	"	25 "	527	1,127
Spades and shovels and spade and shovel blanks, and iron or steel cut to shape for the same	"	35 "	7,891	33,094
Parts of agricultural implements	\$	20 "		673,848
All other agricultural implements, N.E.S.	"	25 "		42,100
Anvils and vises	"	30 "		53,263
Cart or wagon skeins or boxes	Lbs.	30 "	107,413	4,335
Springs, axles, axle bars, N. E. S., and axle blanks and parts thereof of iron or steel, for railway or tramway or other vehicles	Cwt.	35 "	25,412	69,110
Butts and hinges, N.E.S.	\$	30 "		58,059
Cast iron pipe of every description	Cwt.	\$8 per ton	159,410	217,054
Chains, coil chains, chain links and chain shackles of iron or steel 5-16 of an inch in diameter and over	"	5 %	54,531	162,927
Chain, malleable sprocket or link belt- ing, for binders	\$	20 "		30,313
Chains, N.E.S.	"	30 "		88,499
Tacks, shoe	Lbs.	35 "	74,246	5,446
Cut tacks, brad sprigs, or shoe nails, double pointed, and other tacks of iron and steel, N.O.P.	"	35 "	108,476	8,182
Engines, locomotives for railways, N.E.S.	No.	35 "	200	2,431,220
Fire engines	"	35 "	10	8,235
Fire extinguishing machines	"	35 "		49,596
Gasoline engines	"	25 "	563	127,851
Steam engines and boilers	"	25 "	1,129	466,919
Fittings, iron or steel, for iron and steel pipe	Lbs.	30 "	5,593,047	352,699
Carried forward				6,773,051

IRON.

TABLE 10b—Continued.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1904.		Duty.	Quantity.	Value.
				\$
Brought forward				6,773,051
Forgings of iron or steel, of whatever shape or size, or in whatever stage of manufacture, N.E.S., and steel shafting, turned, compressed or polished, and hammered iron or steel bars or shapes, N.O.P.	Lbs.	30 %	3,725,334	139,286
Hardware, viz:				
Builders', cabinet-makers', upholsterers', harness-makers', saddlers' and carriage hardware, including currycombs and horse boots, N.E.S.	\$	30 "		758,741
Horse, mule and ox shoes	"	30 "		6,810
Locks of all kinds	"	30 "		195,744
Automobiles	"	25 "		315,475
Machines and machinery, &c.:				
Fanning mills	No.	25 "	187	2,468
Grain crushers	"	25 "	5	115
Windmills	"	25 "	555	33,914
Ore crushers and rock crushers, stamp mills, cornish and belted rolls, rock drills, air compressors, cranes, derricks and percussion coal cutters	\$	25 "		65,259
Portable machines:				
Fodder or feed cutters	No.	25 "	89	2,350
Horse powers	"	25 "	81	5,797
Portable engines	"	25 "	490	485,598
Portable saw mills and planing mills	"	25 "	30	12,522
Threshers and separators	"	25 "	660	291,774
All other portable machines	"	25 "	862	46,278
Parts of above articles	\$	25 "		169,602
Sewing machines and parts of	No.	30 "	14,427	336,921
Slot machines	"	25 "	686	12,233
Machines, type-writing	"	25 "	2,734	167,299
All other machinery composed wholly or in part of iron or steel, N.O.P.	\$	25 "		5,191,194
Nails and spikes, composition and sheathing nails	Lbs.	15 "	34,864	4,254
Nails and spikes, wrought and pressed, trunk, clout, coopers, cigar box, Hungarian horseshoe and other nails, N.E.S.	"	30 "	257,163	16,636
Nails and spikes, cut, and railway spikes ..	"	1c. per lb.	5,002,053	97,221
Nails, wire of all kinds, N.O.P.	"	3c.	1,290,696	31,133
Pumps, N.E.S.	\$	25 %		202,792
Sad or smoothing, hatters' or tailors' irons, plated wholly or in part or not	"	25 "		9,464
Safes, doors for safes and vaults	"	30 "		92,890
Screws, iron and steel, commonly called 'woodscrews,' N.E.S.	Lbs.	35 "	111,999	20,199
Scales, balances, weighing beams and strength testing machines	\$	30 "		114,585
Skates of all kinds and parts thereof	Pairs	35 "	32,926	27,191
Stoves of all kinds and parts thereof, N.E.S.	\$	25 "		365,997
Sheet iron or steel corrugated, galvanized ..	Cwt.	25 "	8,295	21,975
Sheet iron or steel corrugated not galvanized ..	"	30 "	2,267	4,817
Carried forward				16,021,585

SESSIONAL PAPER No. 26a

TABLE 10b—Continued.

IRON.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1904.	Duty.	Quantity.	Value.
			\$
Brought forward.....			16,021,585
Tubing:			
Boiler tubes of wrought iron or steel, including flues and corrugated tubes for marine boilers..... Lbs.	5 %	3,933,685	375,575
Tubes of rolled steel, seamless, not joined or welded, not more than 1½ inches in diameter..... "	10 "	46,281	4,418
Tubes, seamless steel, for bicycles..... "	10 "	156,766	12,418
Tubing, wrought iron or steel, plain or galvanized, threaded and coupled or not, over 2 inches in diameter, N.E.S. "	15 "	2,266,438	495,887
Tubing, wrought iron or steel, plain or galvanized, threaded and coupled or not, 2 inches or less in diameter, N.E.S. "	35 "	2,667,098	115,991
Other iron or steel tubes or pipes, N.O.P. "	30 "	216,668	45,461
Ware, galvanized sheet iron or of galvanized sheet steel, manufactures of, N.O.P. \$	25 "		21,101
Ware, agate, granite or enamelled iron or steel hollow ware..... "	35 "		62,774
Ware, enamelled iron or steel ware, N.E.S., iron or steel hollow ware, plain black, tinned or coated, and nickel and aluminium kitchen or household hollow ware, N.E.S. "	30 "		132,702
Wire bale ties..... Bundles of 250 ties	30 "	1,658	2,262
Wire cloth or wove wire and netting of iron or steel..... Lbs.	30 "	1,194,526	56,366
Wire screens, doors and windows..... \$	30 "		14,581
Wire fencing, woven, buckthorn strip and wire fencing of iron or steel, N.E.S.... Lbs.	15 "	683,562	19,169
Wire, single or several, covered with cotton, linen, silk, rubber or other material, &c., N.E.S. "	30 "	1,135,377	193,940
Wire of all kinds, N.O.P. "	20 "	8,170,053	202,153
Wire rope, stranded or twisted wire, clothes lines, picture or other twisted wire and wire cables, N.E.S. "	25 "	2,443,730	173,567
Iron or steel nuts, washers, rivets and bolts with or without threads and nut bolt and hinge blanks, and T. and strap hinges of all kinds, N.E.S. "	$\frac{3}{4}$ c.p. lb. and 25 %	3,891,056	147,719
Pen-knives, jack-knives and pocket knives of all kinds..... \$	30 %		186,132
Table cutlery, all kinds, N.O.P. "	30 "		265,651
All other cutlery, N.E.S. "	30 "		199,997
Guns, rifles, including air guns and air rifles, (not being toys) muskets, cannons, pistols, revolvers, or other firearms... "	30 "		459,878
Bayonets, swords, fencing foils and masks... "	30 "		1,971
Needles of any material or kind, N.O.P.... "	30 "		81,739
Carried forward			19,293,037

IRON.

TABLE 106—Continued.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1904.	Duty.	Quantity.	Value.
			\$
Brought forward.....			19,293,037
Tools and implements:			
Adzes, cleavers, hatchets, wedges, sledges, hammers, crow bars, cant dogs and track tools, picks, mattocks and eyes or poles for the same.....	\$ 30 %		54,277
Axes.....	Doz. 25 "	7,302	38,844
Saws.....	\$ 30 "		189,587
Files and rasps, N.E.S.	" 30 "		80,255
Tools, hand or machine, of all kinds, N.O.P	" 30 "		875,080
Knife blades, or blanks, and forks of iron or steel, in the rough not handled, filed, ground or otherwise manufactured..	" 10 "		82
Manufactures: articles or wares not specially enumerated or provided for, composed wholly or in part of iron or steel, and whether partly or wholly manufactured.	" 30 "		2,243,020
Anchors.....	Cwt. Free	5,002	18,106
Iron or steel, rolled round wire rods, in the coil not over $\frac{3}{8}$ -inch in diameter, imported by wire manufacturers for use in making wire in the coil in their own factories	" "	846,250	1,134,149
Iron or steel masts, or parts of.....	" "	204	1,112
Rolled iron tubes not welded, or joined, under $1\frac{1}{2}$ inch in diameter, angle iron 9 and 10 gauge, not over $1\frac{1}{2}$ inch wide, iron tubing lacquered or brass covered, not over $1\frac{1}{2}$ inch diameter, all of which are to be cut to lengths for the manufacture of bedsteads, and to be used for no other purpose, and brass trimmings for bedsteads imported for the manufacture of iron or brass bedsteads.....	" "	49,100	151,017
Steel bowls for cream separators and cream separators	\$ "		450,429
Cream separators: articles for the construction or manufacture of—when imported by manufacturers of cream separators to be used in their own factories for the manufacture of cream separators, O.C....	" "		40,017
Steel rails weighing not less than 45 lbs. per lineal yard for use only in the tracks of railways which are employed in the common carrying of goods and passengers, and are operated by steam motive power only.....	Cwt. "	3,797,678	4,329,363
Steel strip and flat steel wire imported by manufacturers of buckthorn and plain strip fencing, for use in their own factories in the manufacture thereof.....	" "	7	27
Carried forward.....			28,898,402

SESSIONAL PAPER No. 26a

TABLE 10b—Concluded.

IRON.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1904.	Duty.	Quantity.	Value.
			\$
Brought forward			28,898,402
Steel wire, Bessemer soft drawn spring of Nos. 10, 12 and 13 gauge respectively, and homo steel spring wire of Nos. 11 and 12 gauge, respectively, imported by manufacturers of wire mattresses, to be used in their own factories in the manu- facture of such articles..... "	Free.	5,710	17,204
Machinery and structural iron for beet root sugar factories..... \$	"		12,278
Flat steel wire of No. 16 gauge or thinner imported by the manufacturers of cri- noline, corset wire and dress stays, for use in the manufacture of such articles in their own factories..... Cwt.	"	2,080	14,653
Wire, crucible cast steel..... Lbs.	"	1,518,473	74,099
Galvanized iron or steel wire Nos. 9, 12 and 13 gauge..... Cwt.	"	298,822	638,513
Barbed fencing wire of iron and steel..... "	"	340,396	847,019
Total.....			30,502,168

TABLE 11.

IRON.

IMPORTS OF PIG IRON, IRON AND STEEL GOODS, &C., FISCAL YEAR, 1903-1904.

Recapitulation of Tables, 7, 8, 9, 10a and 10b.

	Tons.	Value.
Pig iron	62,515	\$894,728
Pig iron, charcoal.....		
Scrap iron, cast.....	11,385	149,923
Scrap steel, wrought.....	21,027	298,806
Ferro-manganese, &c.....	2,975	75,554
Iron in slabs, blooms, puddled bars, &c.....	10,014	216,571
Iron and steel goods partially manufactured.....		8,485,196
Iron and steel goods more highly manufactured*.....		30,502,168
Total.....		40,622,946

*Machinery, &c., classed under iron and steel goods in Customs report.

LEAD.

LEAD.

The Canadian production of lead for 1904 shows a large increase over the previous year, being more than double the production of 1903.

The returns show a quantity of 37,531,244 lbs. which, estimated according to our custom at the average monthly market price of the refined metal in New York, represents a value of \$1,617,221. This increase is directly traceable, in a great measure, to the bounty on lead mined in Canada, offered by the Dominion Government which caused the reopening of several mines in East Kootenay.

Only two provinces contributed to the total of the production, viz., British Columbia and Ontario, but the last named province comes in only for a very small proportion.

TABLE 1.

LEAD.

ANNUAL PRODUCTION.

Calendar Year.	Pounds.	Price per Pound.	Value.
		cts.	
1887.....	204,800	4 50	\$ 9,216
1888.....	674,500	4 42	29,812
1889.....	165,100	3 93	6,488
1890.....	105,000	4 48	4,704
1891.....	88,665	4 35	3,857
1892.....	808,420	4 09	33,064
1893.....	2,135,023	3 73	79,636
1894.....	5,703,222	3 29	187,636
1895.....	16,461,794	3 23	531,716
1896.....	24,199,977	2 98	721,159
1897.....	39,018,219	3 58	1,396,853
1898.....	31,915,319	3 78	1,206,399
1899.....	21,862,436	4 47	977,250
1900.....	63,169,821	4 37	2,760,521
1901.....	51,900,958	4 334	2,249,387
1902.....	22,956,381	4 069	934,095
1903.....	18,139,283	4 237	768,562
1904.....	37,531,244	4 309	1,617,221

SESSIONAL PAPER No. 26a

Tables 2, 3 and 4 give statistics of the lead trade in Canada.

LEAD.

TABLE 2.

LEAD.

EXPORTS

Calendar Year.	Value.
1873	\$1,993
1874	127
1875	7,510
1876	66
1877	720
1878	
1879	230
1880	
1881	
1882	32
1883	5
1884	36
1885	
1886	
1887	724
1888	18
1889	
1890	
1891	5,000
1892	2,509
1893	3,099
1894	144,509
1895	435,071
1896	462,095
1897	925,144
1898	885,485
1899	466,950
1900	1,917,690
1901	1,804,687
1902	457,170
1903	426,466
1904	559,461

LEAD.

TABLE 3.

LEAD.

IMPORTS OF LEAD.

Fiscal Year.	OLD, SCRAP AND FIG.		BARS, BLOCKS, SHEETS.		TOTAL.	
	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.
1880					30,298	\$124,117
1881	16,236	\$ 56,919	18,222	\$70,744	34,458	127,663
1882	36,655	120,870	10,540	35,728	47,195	156,598
1883	48,780	148,759	8,591	28,785	57,371	177,544
1884	39,409	103,413	9,704	28,458	49,113	131,871
1885	36,106	87,038	9,362	24,396	45,468	111,434
1886	39,945	110,947	9,793	28,948	49,738	139,895
1887	61,160	173,477	14,153	41,746	75,313	215,223
1888	68,678	196,845	14,957	45,900	83,635	242,745
1889	74,223	213,132	14,173	43,482	88,396	256,614
1890	101,197	283,096	19,083	59,484	120,280	342,580
1891	86,382	243,033	15,646	48,220	102,028	291,253
1892	97,375	254,384	11,299	32,368	108,674	286,752
1893	94,485	215,521	12,403	32,286	106,888	247,807
1894	70,223	149,440	8,486	20,451	78,709	169,891
1895	67,261	139,290	6,739	16,315	74,000	155,605
1896	72,433	173,162	8,575	23,169	81,008	196,331
1897	65,279	158,381	10,516	29,175	75,795	187,556

	OLD, SCRAP, FIG AND BLOCK.*		BARS AND SHEETS.†		TOTAL.	
1898	88,420	\$260,779	22,214	\$39,041	110,634	\$299,820
1899	114,659	283,432	44,796	39,833	159,455	323,265
1900	62,361	207,819	15,493	53,506	77,854	251,325
1901	(a) 85,321	97,011	16,295	78,316	101,616	175,327
1902	(a) 122,279	104,672	18,596	49,261	140,875	153,933
1903	(a) 98,530	67,821	11,535	35,398	110,065	103,219
1894	(a) 94,602	121,165	14,102	39,644	108,704	160,809

* Duty 15 p. c.

† Duty 25 p. c.

(a) Includes Canadian lead ore sent to the United States for refining, imported at price of refining only.

TABLE 4.

LEAD.

LEAD.

IMPORTS OF LEAD MANUFACTURES.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.	\$15,400	1892.	\$ 22,636
1881.	22,629	1893.	33,783
1882.	17,282	1894.	29,361
1883.	25,556	1895.	38,015
1884.	31,361	1896.	50,722
1885.	36,340	1897.	60,735
1886.	33,078	1898.	63,179
1887.	19,140	1899.	91,497
1888.	18,816	1900.	104,736
1889.	16,315	1901.	107,260
1890.	25,600	1902.	120,020
1891.	23,893	1903.	134,151
		Duty.	
1904 {	Lead Tea.	Free.	\$61,269
	" Pipe.	35 p. c.	5,968
	" Shot and bullets.	35 "	
	" Manufactures, N.E.S.	30 "	61,856
Total.			\$129,093

Tables 5 and 6 give figures of imports of litharge, and white lead. In this connection we note that the Carter White Lead Co. who have a large plant in Chicago, U.S., are now establishing a factory in Montreal, where they will use pig lead from the Trail smelter.

TABLE 5.

LEAD.

IMPORTS OF LITHARGE.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.	3,041	\$14,334	1893.	7,685	\$24,401
1881.	6,126	22,129	1894.	38,547	28,685
1882.	4,900	16,651	1895.	11,955	32,953
1883.	1,532	6,173	1896.	10,710	32,817
1884.	5,235	18,132	1897.	12,028	34,538
1885.	4,990	16,156	1898.	11,446	32,904
1886.	4,928	16,003	1899.	9,530	32,518
1887.	6,397	21,865	1900.	9,139	29,176
1888.	7,010	23,808	1901.	11,132	51,944
1889.	8,089	31,082	1902.	13,002	47,021
1890.	9,453	31,401	1903.	13,921	47,761
1891.	7,979	27,613	1904. Duty free	9,894	32,633
1892.	10,384	34,343			

LEAD.

TABLE 6.

LEAD.

IMPORTS OF DRY WHITE AND RED LEAD AND ORANGE MINERAL.

Fiscal Year.	Pounds.	Value.
		\$
1885.....	5,404,753	198,913
1886.....	6,703,077	213,258
1887.....	6,998,820	233,725
1888.....	6,361,334	216,654
1889.....	7,066,465	267,236

IMPORTS OF DRY WHITE AND RED LEAD, ORANGE MINERAL AND ZINC WHITE.

Fiscal Year.	Pounds.	Value.
		\$
1890.....	10,859,672	381,959
1891.....	8,560,615	337,407
1892.....	10,288,766	351,686
1893.....	10,865,183	364,680
1894.....	10,958,170	353,053
1895.....	8,780,052	282,353
1896.....	11,711,496	367,569
1897.....	10,310,463	347,539
1898.....	12,682,808	448,659
1899.....	14,507,945	514,842
1900.....	14,679,920	634,492
1901.....	10,241,601	461,368
1902.....	15,584,164	603,582
1903.....	19,208,786	758,371
1904.....Duty, 5 p.c.	16,925,585	662,098

SESSIONAL PAPER No. 26a

As will be seen by consulting table 7 or 8, British Columbia is LEAD. responsible for very nearly the total Canadian lead production. The figures for 1904 are more than double those of 1903. This is mainly due to the reopening of the St. Eugene mine in the Fort Steele division of the East Kootenay district, whose operation was materially assisted by the bounty offered by the Dominion Government.

TABLE 7.

LEAD.

BRITISH COLUMBIA : PRODUCTION.

Calendar Year.	Pounds.	Price per Pound.	Value.
		cts.	
1887.....	204,800	4·50	\$ 9,216
1888.....	674,500	4·42	29,813
1889.....	165,100	3·93	6,488
1890.....	Nil:		
1891.....	"		
1892.....	808,420	4·09	33,064
1893.....	2,131,092	3·73	79,490
1894.....	5,703,222	3·29	187,636
1895.....	16,461,794	3·23	531,716
1896.....	24,199,977	2·98	721,159
1897.....	38,841,135	3·58	1,390,513
1898.....	31,693,559	3·78	1,198,017
1899.....	21,862,436	4·47	977,250
1900.....	63,158,621	4·37	2,760,031
1901.....	51,582,906	4·334	2,235,603
1902.....	22,536,381	4·069	917,005
1903.....	18,089,283	4·237	766,443
1904.....	36,646,244	4·309	1,579,086

TABLE 8.

LEAD.

BRITISH COLUMBIA : PRODUCTION BY DISTRICTS.

—	1901.	1902.	1903.	1904.
	Pounds.	Pounds.	Pounds.	Pounds.
East Kootenay—				
Fort Steele	29,129,128	3,017,756	717,479	21,071,236
Other districts.....	775,016	204,652	951,296	401,022
West Kootenay—				
Ainsworth.....	3,788,412	3,083,039	4,299,727	3,091,648
Nelson	2,470,350	1,680,948	1,072,542	976,570
Slocan	15,025,759	13,651,144	9,880,469	10,611,227
Trail Creek.....				
Other districts	391,844	885,734	1,144,239	485,520
Yale.....	2,397	13,108	23,531	9,021
	51,582,906	22,536,381	18,089,283	36,646,244

LEAD.

In Ontario the only output of lead ore was from the Hollandia mine, in the county of Hastings. This is worked by the Ontario Mining and Smelting Company who operate a smelter.

NICKEL.

NICKEL.

Both in value and quantity, the nickel production shows decreases as compared with 1903. In quantity there was a falling off of 1,957,627 lbs., and in value of \$783,051. This is estimating the nickel contents of the matte at the final average market price in New York, which price for 1904 was 40 cents a pound.

The production of ore, matte, etc, in 1904 was as follows :

Ore mined.....	203,388 tons.
Ore smelted	118,470 "
Matte made.....	8,924 "
Matte shipped.....	10,154 "
Matte in stock at end of year	17 "
Copper contents of matte shipped.....	2,455 "
Nickel	5,274 "
Spot value of matte shipped.....	\$2,193,198.

All of the nickeliferous matte is exported. According to Customs returns the exports of nickel in matte were as follows in 1904 :—

To Great Britain	2,028,908 lb.
To United States	9,204,961 "
Total.....	11,233,869 "

Canada is now the world's largest producer of nickel. The whole Canadian production is derived from the deposits of the Sudbury region, Ont., which occurs in eruptive rocks which Dr. Barlow classes as gabbros or norite and diorite associated with rocks of Huronian age and igneous rocks which are of more recent origin. These have been very exhaustively dealt with by Dr. A. E. Barlow in his report entitled 'On the origin and geological relations and composition of the nickel and copper deposits of the Sudbury Mining District,' which was published this year by the Geological Survey. This report is accompanied by five maps.

The chief operators of the Sudbury district are:—The Canadian Copper Company, Copper Cliff, Ont.; The Mond Nickel Company, Victoria Mines, Nipissing, Ont.; The Lake Superior Power Co., Sault Ste Marie, Ont. There are other nickeliferous deposits in Canada, but they are not being exploited. Ores bearing this metal occur in the Timiskaming region in rocks which are probably an extension of the Huronian rocks in which the Sudbury deposits are found. Nickeliferous pyrrhotite deposits have also been known for a long time in intrusive rocks found at St. Stephen, New Brunswick, as well as at

SESSIONAL PAPER No. 26a

several places in the Eastern Townships of the province of Quebec. NICKEL. Dr. Barlow in the report mentioned above gives a short résumé of all known nickel occurrences in Canada.

TABLE 1.
NICKEL.
ANNUAL PRODUCTION.

Calendar Year.	Pounds of Nickel in Matte.	Final Average Market Price per lb. at New York.	Value.
1889.....	*830,477	60c.	\$ 498,286
1890.....	1,435,742	65c.	933,232
1891.....	4,035,347	60c.	2,421,208
1892.....	2,413,717	58c.	1,399,956
1893.....	3,982,982	52c.	2,071,151
1894.....	4,907,430	38½c.	1,870,958
1895.....	3,888,525	35c.	1,360,984
1896.....	3,397,113	35c.	1,188,990
1897.....	3,997,647	35c.	1,399,176
1898.....	5,517,690	33c.	1,820,838
1899.....	5,744,000	36c.	2,067,840
1900.....	7,080,227	47c.	3,327,707
1901.....	9,189,047	50c.	4,594,523
1902.....	10,693,410	47c.	5,025,903
1903.....	12,505,510	40c.	5,002,204
1904.....	10,547,883	40c.	4,219,153

* Calculated from shipments made by rail.

TABLE 2.
NICKEL.
EXPORTS.*

Calendar Year.	Value.	Calendar Year.	Value.
1890.....	\$ 89,568	1898.....	\$ 1,019,363
1891.....	667,280	1899.....	939,915
1892.....	293,149	1900.....	1,031,030
1893.....	629,692	1901.....	751,080
1894.....	559,356	1902.....	1,007,211
1895.....	521,783	1903.....	1,116,099
1896.....	658,213	1904.....	1,091,349
1897.....	723,130		

* Practically all the nickel-bearing ore and matte produced in Canada is exported, the apparent discrepancy between Tables Nos. 1 and 2 being due to the different basis of valuation adopted in the two instances. Table 1 represents the total final values of the nickel produced in Canada, for the years represented. In Table 2 the worth of the product shipped is entered at its spot value to the operators, and depends upon the particular stage to which they happen to carry the process of extraction at the time, *e.g.*, whether the shipments made are raw ore, low grade matte or high grade matte, &c.

NICKEL.

TABLE 3.
NICKEL.
IMPORTS.

Calendar Year.		Value.
1890		\$ 3,154
1891		3,889
1892		3,208
1893		2,905
1894		3,528
1895		4,267
1896		4,787
1897		4,737
1898		5,882
1899		9,449
1900		6,988
1901		12,029
1902		15,448
1903		26,177
1904 { Nickel anodes..... Nickel*.....		Duty.
		10 p. c.
		Free.
		13,360
		1,322
		\$ 14,682

* Classified under the general heading of minerals in the Trade and Navigation Report.

ZINC.

ZINC.

Zinc mining has not yet become an established industry in Canada.

Although some shipments of ore have been made from several mines in British Columbia, no statistics of production are yet available for this province.

The production given in the table represents ore taken out in developing a zinc property in the township of Olden, county of Frontenac, Ontario. The total production of ore during the year was 533 gross tons, valued at \$3,700. The owners of this property, James Richardson and Sons of Kingston, have decided to put in a milling plant as it has been found impossible to make it a paying proposition without treating the ore on the ground.

SESSIONAL PAPER No. 26a

TABLE 1.
ZINC.
ANNUAL PRODUCTION OF ZINC.

ZINC.

Calendar Year.	Pounds.	Value.
1898.....	788,000	\$ 36,011
1899.....	814,000	46,805
1900.....	212,000	9,342
1901.....		
1902.....	142,200	6,882
1903.....	900,000	48,600
1994	477,568	24,356

TABLE 2.
ZINC.
IMPORTS OF ZINC IN BLOCKS, PIGS AND SHEETS.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	13,805	\$67,881	1893.....	26,446	124,360
1881.....	20,920	94,015	1894.....	20,774	90,680
1882.....	15,021	76,631	1895.....	15,061	63,373
1883.....	22,765	94,799	1896.....	20,223	80,784
1884.....	18,945	77,373	1897.....	11,946	57,754
1885.....	20,954	70,598	1898.....	35,148	112,785
1886.....	23,146	85,599	1899.....	18,785	107,477
1887.....	26,142	98,557	1900.....	28,748	156,167
1888.....	16,407	65,827	1901.....	20,527	103,457
1889.....	19,782	83,935	1902.....	34,871	141,560
1890.....	18,236	92,530	1903.....	26,646	142,827
1891.....	17,984	105,023	1904Duty free	25,553	138,057
1892.....	21,881	\$127,302			

TABLE 3.
ZINC.
IMPORTS OF SPSLTER.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	1,073	\$ 5,310	1893.....	10,721	\$49,822
1881.....	2,904	12,276	1894.....	8,423	35,615
1882.....	1,654	7,779	1895.....	9,249	30,245
1883.....	1,274	5,196	1896.....	10,897	40,548
1884.....	2,239	10,417	1897.....	8,342	32,826
1885.....	3,325	10,875	1898.....	2,794	13,561
1886.....	5,432	18,238	1899.....	5,450	29,687
1887.....	6,908	25,007	1900.....	5,836	29,416
1888.....	7,772	29,762	1901.....	14,621	58,283
1889.....	8,750	37,403	1902.....	18,356	80,757
1890.....	14,570	71,122	1903.....	23,159	110,817
1891.....	6,249	31,459	1904Duty free	33,952	164,761
1892.....	13,909	62,550			

*Spelter in blocks and pigs.

ZINC.

TABLE 4.

ZINC.

IMPORTS OF ZINC, MANUFACTURES OF.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$ 8,327	1892.....	\$ 7,563
1881.....	20,178	1893.....	7,464
1882.....	15,526	1894.....	6,193
1883.....	22,599	1895.....	5,581
1884.....	11,952	1896.....	6,290
1885.....	9,459	1897.....	5,145
1886.....	7,345	1898.....	10,503
1887.....	6,561	1899.....	14,661
1888.....	7,402	1900.....	11,475
1889.....	7,233	1901.....	6,882
1890.....	6,472	1902.....	6,683
1891.....	7,178	1903.....	9,754
1904 { Zinc seamless drawn tubing.....		Duty.	
" manufactures of, N.O.P.....		Free.	
Total.....		25 %	\$ 12,682
			12,682

The following remarks on the zinc ores of British Columbia are taken from the Report of the Minister of Mines for the province for 1904.

"Zinc ores have been receiving a great deal of attention during this past year, more particularly those of the Slocan district, but, with the exception of the ore from the Ivanhoe mine, Sandon, it could not be learned that any important amount of ore had been sold before the close of the year. In the Slocan district, zinc blende occurs with the galena ores, sometimes in considerable quantity, and usually associated with iron carbonates. Most of the concentrating mills have now been equipped so as to separate out a "zinc concentrate" from the jigs and tables. These concentrates will run from 38 to 48 per cent zinc (as zinc blende) but will carry as impurities, considered from the standpoint of a zinc ore, from 2 to 5 per cent of lead, as galena, from 5 to 15 per cent of iron, as pyrite and carbonate, and from 20 to 45 ounces of silver to the ton, with the balance gangue matter, usually highly silicious.

"Most of the zinc smelting works which are prepared to buy zinc ores are now using the Belgian furnace, in which the ore is mixed with coal or other reducing agent, placed in a clay retort, the reduced zinc being distilled off and caught in a condenser. Iron and lead are highly

SESSIONAL PAPER No. 26a

objectionable in this process inasmuch as they flux with and destroy ZINC the retorts, adding greatly to the cost of the process. For this reason crude Slocan concentrates have not found a ready market and to remove these objectionable impurities two "zinc enrichment" plants are under construction, in addition to the Payne mine magnetic separator. It is believed that these impurities can be so removed, to such an extent at least, as to render them non-injurious, but the question of the silver still remains to be solved, for, as far as could be observed, it is directly included in, and a part of, the zinc blende, and cannot be separated, save by smelting or some other form of disintegration of that mineral.

"While this silver cannot be considered as detrimental to the ore as a zinc ore, it is very difficult to separate and save the silver, and but a partial recovery can be made at the best; consequently the price offered by ore buyers seems very low for the silver contents. For this reason it has so far been found advisable by all the producers to throw as much zinc into the lead concentrates as the lead smelter will accept without a penalty, in which case the producer gets no pay for his zinc but gets a price for its silver contents which more than recoups him for his loss of zinc. These conditions apply to zinc smelting as it is usually carried on. There are, however, two or three newer processes not very widely known, which are especially adapted to such ores, but operators of these concerns are naturally only prepared to give enough for the ore to outbid the regular zinc smelter. An electric process is being developed in Vancouver which has considerable promise and which can be utilized in small units, and this may help to solve the problem by the local treatment of the concentrates.

"The ore from the "Lucky Jim" mine of the Slocan is a zinc ore, low in silver, with iron and lead as occasional impurities. About 2,000 tons of this ore were shipped to Kaslo about the end of 1904, but the sales had not been completed by the close of the year.

"There are zinc ore properties on Quatsino Sound and also near Vancouver, but so far no shipments have been made and little development has been done."

MISCELLA-
NEOUS.

MISCELLANEOUS.

ALUMINIUM.

Aluminum. The Northern Aluminium Company have extensive works at Shawenegan Falls, Que., where they manufacture aluminium from ores imported from France and Germany. They have also a well equipped wire mill where the metal is made into aluminium wire and cables which are used extensively now in transmission of electricity. No Canadian raw material is used, but it is interesting to mention the industry inasmuch that it may stimulate search and prospecting for ores of alumina. The Northern Aluminium Company use bauxite imported from France and Germany.

ANTIMONY.

Antimony. The last return of production of antimony which was received in this office was for the year 1898. Since then, however, the reports of the Department of Customs show an annual export of antimony, of which we have no record of production. The greater part of the Canadian production of antimony has been derived from the Rawdon mine, Hants county, Nova Scotia, which is owned by the Dominion Antimony Company of Halifax. This deposit is a vein some six feet wide, of which a width of some twenty inches contains stibnite, kermesite, galena and other minerals.

Other comparatively important deposits of antimony are known to occur in South Ham, Wolfe county, Que., and at Prince William, York county, N.B.

TABLE 1.

MISCELLANEOUS.

METALLIC.

ANNUAL PRODUCTION OF ANTIMONY ORE.

Calendar Year.	Tons.	Value.
1886	665	\$31,490
1887	584	10,860
1888	345	3,696
1889	55	1,100
1890	26½	625
1891	10	60
1892 to 1897	Nil.	Nil.
1898	1,344	20,000

SESSIONAL PAPER No. 26a

TABLE 2.

MISCELLANEOUS.

METALLIC.

EXPORTS OF ANTIMONY ORES.

MISCELLANEOUS.

Antimony.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1880.....	40	\$ 1,948	1890.....	38	\$ 1,000
1881.....	34	3,308	1891.....	3 $\frac{1}{2}$	60
1882.....	323	11,073	1892 to 1897..	Nil.	Nil.
1883.....	165	4,200	1898.....	1,232	15,295
1884.....	483	17,875	1899.....	6 $\frac{3}{4}$	190
1885.....	758	36,250	1900.....	210	3,441
1886.....	665	31,490	1901.....	10	1,643
1887.....	229	9,720	1902.....	90	13,658
1888.....	352 $\frac{1}{2}$	6,894	1903.....	33	4,332
1889.....	30	695	1904.....	160	7,237

TABLE 3.

MISCELLANEOUS.

METALLIC.

IMPORTS OF ANTIMONY.

Calendar Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	42,247	\$ 5,903	1892.....	180,308	17,680
1881.....		7,060	1893.....	181,823	14,771
1882.....	183,597	15,044	1894.....	139,571	12,249
1883.....	105,346	10,355	1895.....	79,707	6,131
1884.....	445,600	15,564	1896.....	163,209	9,557
1885.....	82,012	8,182	1897.....	134,661	8,031
1886.....	89,787	6,951	1898.....	156,451	12,350
1887.....	87,827	7,122	1899.....	289,066	16,851
1888.....	120,125	12,242	1900.....	186,997	20,001
1889.....	119,034	11,206	1901.....	350,737	24,714
1890.....	117,066	17,439	1902.....	504,822	39,276
1891.....	114,084	17,483	1903.....	868,146	65,434
1904 { Antimony, or regulus of, not ground, pulverized or otherwise manufactured. Antimony salts.....			Duty.		
			Free.	301,882	18,228
			"	117,061	8,884
Total.....				418,943	27,112

MISCELLA-
NEOUS,

COBALT.

Cobalt.

According to the figures published by the Ontario Bureau of Mines the production of cobalt in 1904 was 29 tons valued at \$36,620. This was derived from two sources (1) the nickeliferous ores of the Sudbury district, and (2) the silver-cobalt-arsenides lately discovered in Coleman township. As regards the first of these sources, the production is likely to cease for the present, on account of the new processes introduced in the remodelled smelters of the Canadian Copper Company and the Mond Company in which cobalt is not recovered. But as the Ontario report remarks: "The extinction of this source of supply of cobalt, however, by no means implies the disappearance of cobalt from the list of minerals produced in Ontario. Indeed the new resources of this metal now being exploited in Coleman township are of much greater extent and value as a source of cobalt, than the pyrrhotites of Sudbury, in which it is present in small percentages only. The ores of Coleman are no doubt the richest ores of cobalt now being mined anywhere, containing as they do up to 18 per cent of the metal."

MERCURY.

Mercury.

There has been no production of mercury reported since 1897. The small production reported in 1895-1896 and 1897 was derived from the deposits situated at the western end of Kamloops Lake, British Columbia. These deposits consist of quartz veins, containing pockets of cinnabar. These veins are in a zone of decomposed feldspar in a wavy baser country rock of Tertiary age.

TABLE 4.

MISCELLANEOUS.

METALLIC.

PRODUCTION OF MERCURY.

Calendar Year.	Flasks (76½ lb.)	Price per flask.	Value.
1895.....	71	\$ 33 00	\$ 2,343
1896.....	58	33 44	1,940
1897.....	9	36 00	324

TABLE 5.
MISCELLANEOUS.
METALLIC.
IMPORTS OF MERCURY.

MISCELLA
NEOUS.

Mercury.

Fiscal Year.	Pounds.	Value.
1882.	2,443	\$ 965
1883.	7,410	2,991
1884.	5,848	2,441
1885.	14,490	4,781
1886.	13,316	7,142
1887.	18,409	10,618
1888.	27,951	14,943
1889.	22,931	11,844
1890.	15,912	7,677
1891.	29,775	20,223
1892.	30,936	15,038
1893.	50,711	22,998
1894.	36,914	14,483
1895.	63,732	25,703
1896.	77,869	32,343
1897.	76,058	33,534
1898.	59,759	36,425
1899.	103,017	51,695
1900.	85,342	51,987
1901.	140,610	94,564
1902.	97,283	56,615
1903.	164,968	91,625
1904. Duty free	151,107	80,658

PLATINUM.

In the report on the nickel and copper deposits by Dr. A. E. Barlow Platinum. it is estimated that the ores of the Sudbury district contain 1.25 oz. of the platinum group metals per ton of nickel contents. On this assumption the value of the platinum contents of the ore extracted from the deposits up to 1904 would be over \$800,000.

The report of the Ontario Bureau of Mines for 1904 gives the following :—

“The fact that platinum has been recovered from Sudbury ores as part of their commercial treatment has only recently been made public, and the successful extraction of quantities so minute is a tribute to the perfection at which modern metallurgical processes have arrived..... The yield of this rare metal for 1904 is returned at 530 ounces, which at \$19.50 had a value of \$10,452. In 1902 and 1903 the quantities

* See report on the origin, geological relations and composition of the nickel and copper deposits of the Sudbury mining districts by Barlow. Annual Report Geological Survey of Canada. Vol. XIV, Part H.

MISCELLA-
NEOUS.
Platinum.

obtained were considerably larger, being for the former year, 2,375 ounces and for the latter 1710 ounces, of the value at the above price per ounce, of \$46,312 and \$33,345 respectively.....

The above quantities (for 1902-1903 and 1904) were recovered, not only from the mattes treated during the respective years, but also from the residues or accumulations of several years, so that no data exist for estimating the tonnage of the ore from which they were taken, or how much was obtained from the matte in any one year."

TABLE 6.
MISCELLANEOUS.
METALLIC.
ANNUAL PRODUCTION OF PLATINUM.

Calendar Year.	Value.	Calendar Year.	Value.
1887.....	\$ 5,600	1896.....	750
1888.	6,000	1897.....	1,600
1889.....	3,500	1898.....	1,500
1890.....	4,500	1899.....	825
1891.....	10,000	1900.....	Nil.
1892.....	3,500	1901.....	457
1893.....	1,800	1902.....	46,502
1894.....	950	1903.....	33,345
1895.....	\$3,800	1904.....	10,872

TABLE 7.
MISCELLANEOUS.
METALLIC.
IMPORTS OF PLATINUM.

Fiscal Year.	Value.	Fiscal Year.	Value.
1883.....	\$ 113	1894.....	\$7,151
1884.....	576	1895.....	3,937
1885.....	792	1896.....	6,185
1886.....	1,154	1897.....	9,031
1887.....	1,422	1898.....	9,781
1888.....	13,475	1899.....	9,671
1889.....	3,167	1900.....	57,910
1890.....	5,215	1901.....	20,263
1891.....	4,055	1902.....	19,357
1892.....	1,952	1903.....	21,251
1893.....	14,082	1904*	28,112

*Platinum wire and platinum in bars, strips, sheets or plates, platinum retorts, pans, condensers, tubing and pipe, imported by manufacturers of sulphuric acid for use in their works. Duty free.

SESSIONAL PAPER No. 26a

In the above table, the production of the years previous to 1902, has been obtained from placer workings of the Similkameen district of British Columbia. The 1902-3-4 production has been derived, to a large extent, from the Sudbury ores as above mentioned. A small quantity also comes from British Columbia.

PALLADIUM.

It has been known for a long time that palladium was present in the nickel ore of the Sudbury district, but no definite information could be obtained as to whether the metals of the platinum group were saved in the treatment which the ores and mattes underwent. As far back as 1889, it was discovered that sperrylite, the arsenide of platinum, which is present in the Sudbury ores, contained traces of palladium. But the occurrence was noted as being only of mineralogical interest. Of late years, however, the sources of platinum have not been able to supply the demand and palladium is being considered as a possible substitute on account of its malleability and high melting point (Palladium 1500°C., Platinum 1750°C.).

The metal palladium is now being recovered from the Sudbury ores and according to figures received by the Ontario Bureau of Mines the production for the last three years has been as follows:

	Ounces	Value
1902.....	4,411....	\$86,014
1903.....	3,177.....	61,952
1904.....	952.....	18,564

The high figures for 1902 and 1903 are perhaps due to working over some accumulation of old residue from matte treated in previous years.

TIN.

No deposits of tin, of an economic nature, have yet been discovered in Canada, although reports that tin ores have been discovered in large quantities in this country are quite frequent. We give in the table below, figures relating to the Canadian tin trade.

MISCELLA-
NEOUS.

TABLE 8.

MISCELLANEOUS.

METALLIC.

Tin.

IMPORTS OF TIN AND TINWARE.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$ 281,880	1892.....	\$1,594,205
1881.....	413,924	1893.....	1,242,994
1882.....	790,285	1894.....	1,310,389
1883.....	1,274,150	1895.....	973,397
1884.....	1,018,493	1896.....	1,237,684
1885.....	1,060,883	1897.....	1,274,108
1886.....	1,117,368	1898.....	1,550,851
1887.....	1,187,312	1899.....	1,372,813
1888.....	1,164,273	1900.....	2,418,455
1889.....	1,243,794	1901.....	2,339,109
1890.....	1,289,756	1902.....	2,293,958
1891.....	1,206,918	1903.....	2,712,186
1904 { Tin crystals..... Tin in blocks, pigs and bars..... Tin plates and sheets..... Tin foil..... Tin strip waste..... Tin and manufactures of :— Tin plate in sheets, decorated..... Tinware, plain, japanned, or lithographed and all manufactures of tin, N.E.S..... Total.....		Duty.	
		Free.	\$ 2,168
		"	720,213
		"	1,461,811
		"	51,890
		"	2,497
		25 %	.....
		25 %	150,978
			\$2,389,557

ABRASIVE MATERIALS.

The mineral substances mined under this head in Canada result from the working of the several grindstone quarries of Nova Scotia and New Brunswick and of the products of the corundum mines of Eastern Ontario. In 1904 the total value of all classes of products resulting from these activities aggregated—spot values—\$152,327.

SESSIONAL PAPER No. 26a

Grindstone.—A production of 4,649 tons valued at \$42,782, was obtained in 1904, which is somewhat less than that for 1903. There has been comparatively little variation in the output for the past ten years.

Corundum.—The shipments of grain corundum in 1904 reached a total of 993 tons valued at \$109,545 or 5½ cents per pound. The output of the corundum mills, however, was much greater than the sales, being about 1,554 tons. The difference was held in stock at the close of the year,

Statistics of production since 1900 are as follows :—

	Quantity.	Value.
1900 grain corundum.....	3 tons.	\$ 300
1901 "	444 "	53,115
1902 "	768 "	84,465
1903 " and corundum ore.....	970 "	80,180
1904 "	993 "	109,545

The Canada Corundum Company operated the Craig mine in the township of Raglan, Renfrew county, during the whole year, employing about 170 men. They have a large, well equipped mill, operated by both steam and waterpower for concentrating the ore and grading the grain corundum. The mill was operated for about ten months the other two months being spent on construction work. The output of this company for the past three years has been as follows :

—	1901.	1902.	1903.	1904.
Corundum-bearing rock treated.....	4,134 tons.	7,996 tons.	8,877 tons.	26,822 tons.
Grain corundum, graded.	868,590 lbs	1,611,100 lbs	1,678,833 lbs	3,159,732 lbs
Grain corundum sold in Canada.....	171,537 lbs	211,887 lbs	169,011 lbs	232,387 lbs
Grain corundum exported to England.....	20,331 "	176,342 "	1,236,695 "	121,944 "
Grain corundum exported to United States.....	576,402 "	784,947 "		1,129,601 "
Grain corundum exported to Europe.....	5,320 "	362,554 "		353,358 "
Total sales.....	773,590 "	1,535,730 "	1,405,706 "	1,837,290 "

ABRASIVE
MATERIALS.

TABLE 1.
ABRASIVE MATERIALS.
ANNUAL PRODUCTION OF GRINDSTONES.

CALENDAR YEAR.	NOVA SCOTIA.		NEW BRUNSWICK.		TOTAL.		AVERAGE VALUE PER TON.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	
1886.....	1,765	\$24,050	2,255	\$22,495	4,020	\$46,545	\$11 58
1887.....	1,710	25,020	3,582	38,988	5,292	64,008	12 10
1888.....	1,971	20,400	3,793	30,729	5,764	51,129	8 87
1889.....	712	7,128	2,692	23,735	3,404	30,863	9 07
1890.....	850	8,536	4,034	33,804	4,884	42,340	8 67
1891.....	1,980	19,800	2,499	22,787	4,479	42,587	9 51
1892.....	2,462	27,610	2,821	23,577	5,283	51,187	9 69
1893.....	2,112	21,000	2,488	17,379	4,600	38,379	8 34
1894.....	2,123	16,000	1,629	16,717	3,757	32,717	8 71
1895.....	1,400	14,000	2,075	17,932	3,475	31,932	9 19
1896.....	1,450	14,500	2,263	18,810	3,713	33,310	8 97
1897.....	1,407	17,500	3,165	24,840	4,572	42,340	9 26
1898.....	1,422	12,350	3,513	32,425	4,935	44,775	9 07
1899.....	1,378	10,300	3,133	32,965	4,511	43,265	9 59
1900.....	1,411	12,600	4,128	40,850	5,539	53,450	9 65
1901.....	358	3,200	4,223	42,490	4,581	45,690	9 97
1902.....	1,074	8,118	3,559	36,000	4,633	44,118	9 52
1903.....	1,337	9,562	4,201	38,740	5,538	48,302	8 72
1904.....	1,029	7,332	3,620	35,450	4,649	42,782	9 20

TABLE 2.
ABRASIVE MATERIALS.
EXPORTS OF GRINDSTONES.

Calendar Year.	Value.
1884.....	\$28,186
1885.....	22,606
1886.....	24,185
1887.....	28,769
1888.....	28,176
1889.....	29,982
1890.....	18,564
1891.....	28,433
1892.....	23,567
1893.....	21,672
1894.....	12,579
1895.....	16,723
1896.....	19,139
1897.....	18,807
1898*.....	25,588
1899*.....	23,288
1900*.....	42,128
1901*.....	29,130
1902*.....	24,489
1903*.....	27,659
1904*.....	35,612

* Including stone for the manufacture of grindstones.

TABLE 3.
ABRASIVE MATERIALS.
IMPORTS OF GRINDSTONES.

ABRASIVE
MATERIALS.

Fiscal Year.	Duty.	Tons.	Value.
1880.....		1,044	\$11,714
1881.....		1,359	16,895
1882.....		2,098	30,654
1883.....		2,108	31,456
1884.....		2,074	30,471
1885.....		1,148	16,065
1886.....		964	12,803
1887.....		1,309	14,815
1888.....		1,721	18,263
1889.....		2,116	25,564
1890.....		1,567	20,569
1891.....		1,381	16,991
1892.....		1,484	19,761
1893.....		1,682	20,987
1894.....		1,918	24,426
1895.....		1,770	22,834
1896.....		1,862	26,561
1897.....		1,521	25,547
1898.....			22,217
1899.....			27,476
1900.....			34,382
1901.....			39,068
1902.....			40,838
1903.....			53,388
1904 {	Grindstones not mounted and not less than 36 inches in diameter.....	15 p.c.	8,144
	Grindstones N.E.S.....	25 p.c.	7,895
			46,039

TABLE 4.
ABRASIVE MATERIALS.
IMPORTS OF BURRSTONES.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$12,049	1893.....	\$ 3,552
1881.....	6,337	1894.....	3,029
1882.....	15,143	1895.....	2,172
1883.....	13,242	1896.....	2,049
1884.....	5,365	1897.....	1,827
1885.....	4,517	1898.....	1,813
1886.....	4,062	1899.....	1,759
1887.....	3,545	1900.....	1,546
1888.....	4,753	1901.....	5,762
1889.....	5,465	1902.....	2,559
1890.....	2,506	1903.....	586
1891.....	2,089	1904*.....	35
1892.....	1,464		

* Burrstones in blocks, rough or unmanufactured, not bound up or prepared for binding into mill-stones. Duty free.

ABRASIVE
MATERIALS.

TABLE 5.

ABRASIVE MATERIALS.

IMPORTS OF EMERY.

Fiscal Year.	Emery. <i>a.</i>	Mfrs. of Emery. <i>b.</i>
1885.....	\$ 5,066	\$ 4,920
1886.....	11,877	5,832
1887.....	12,023	4,598
1888.....	15,674	4,001
1889.....	13,565	3,948
1890.....	16,922	5,313
1891.....	16,179	6,665
1892.....	17,782	6,492
1893.....	17,762	5,606
1894.....	14,433	2,223
1895.....	14,569	7,775
1896.....	16,287	11,913
1897.....	16,318	11,231
1898.....	17,661	15,478
1899.....	21,454	22,343
1900.....	19,312	25,615
1901.....	16,311	22,190
1902.....	14,476	23,892
1903.....	18,058	22,177
1904.....	21,626	29,273

a Emery in bulk, crushed or ground. Duty free.*b* Emery wheels and manufactures of emery. Duty 25 p.c.

TABLE 6.

ABRASIVE MATERIALS.

IMPORTS OF PUMICE STONE.

Fiscal year.	Value.
1885.....	\$ 9,384
1886.....	2,777
1887.....	3,594
1888.....	2,890
1889.....	3,232
1890.....	3,003
1891.....	3,696
1892.....	3,282
1893.....	3,798
1894.....	4,160
1895.....	3,609
1896.....	3,721
1897.....	2,903
1898.....	3,829
1899.....	5,973
1900.....	5,604
1901.....	5,516
1902.....	7,254
1903.....	6,152
*1904.....	6,537

* Pumice and pumice stone, ground or unground. Duty free.

SESSIONAL PAPER No. 26a

ASBESTUS.

ASBESTUS.

The Canadian production of asbestos is entirely derived from the province of Quebec. This mineral occurs in this province in connection with rocks of two different ages. In the Eastern Townships it is found in the serpentines which are classed in 'Quebec group' rocks. The centres of production for those deposits are Thetford, Black Lake, East Broughton and Danville. In the district to the north and north-east of Ottawa, asbestos is found in serpentinous and crystalline limestone of Laurentian age. However, only the Eastern Townships deposits are worked at present and they are responsible for the total Canadian output.

The sales of asbestos in 1903 and 1904 were as follows according to returns received by the Department :

	1903		1904	
	Tons.	Value.	Tons.	Value.
Crude mineral	3,134	\$361,867	4,410	\$534,874
Mill Stock	27,995	554,021	31,201	678,628
Asbestic	10,548	13,869	12,854	12,850
	41,677	929,757	48,465	1,226,352

Mr. Obalski, Inspector of Mines for the province of Quebec, reports the production in 1902, 1903 and 1904 as follows :—

Grade of product.	1902	1903	1904
	Tons.	Tons.	Tons.
1st class crude	1,319	930	1,645
2nd "	3,131	2,354	2,727
Fibre	15,502	9,650	7,771
Paper stock.	10,682	16,327	23,336
	30,634	29,261	35,479
Asbestic	9,764	9,906	13,149
	40,398	39,167	48,628

The figures show a marked increase over the 1903 production, both in quantity and in value. The average price per ton has also been higher owing to a greater proportion of the first and second class products, although the tonnage of the mill stock, the value of which is much inferior, is also higher than the previous years. The prices of asbestos cover a wide range, from \$18 or \$20 a ton for the mill stock to \$175 or \$200 for the best first-class mineral. It is therefore not to be wondered at that the average price per ton shows important variations from year to year, more especially if the production of asbestic which sells for \$1 per ton, be taken into account.

ASBESTUS.

The following tables give the condition of the asbestos industry and figures of exports and imports for several years back.

TABLE 1.

ASBESTUS.

PRODUCTION.—1896 TO 1904.

	Tons.	Value.	Average Value per ton.
1896—Asbestos.....	10,892	\$ 423,066	\$ 38.84
Asbestic.....	1,358	6,790	5.00
	12,250	\$ 429,856	\$ 35.09
1897—Asbestos.....	13,202	\$ 399,528	\$ 30.26
Asbestic.....	17,240	45,840	2.66
	30,442	\$ 445,368	\$ 14.63
1898—Asbestos.....	16,124	\$ 475,131	\$ 29.46
Asbestic.....	7,661	16,066	2.10
	23,785	\$ 491,197	\$ 20.65
1899—Asbestos.....	17,790	\$ 468,635	\$ 26.34
Asbestic.....	7,746	17,214	2.22
	25,536	\$ 485,849	\$ 19.03
1900—Asbestos.....	21,621	\$ 729,886	\$ 33.76
Asbestic.....	7,520	18,545	2.46
	29,141	\$ 748,431	\$ 25.68
1901—Asbestos.....	32,892	\$ 1,248,645	\$ 37.96
Asbestic.....	7,325	11,114	1.52
	40,217	\$ 1,259,759	\$ 31.32
1902—Asbestos.....	30,219	\$ 1,126,688	\$ 37.28
Asbestic.....	10,197	21,631	2.12
	40,416	\$ 1,148,319	\$ 28.41
1903—Asbestos.....	31,129	\$ 915,888	\$ 29.42
Asbestic.....	10,548	13,869	1.31
	41,677	929,757	\$ 22.31
1904—Asbestos.....	35,611	\$ 1,213,502	\$ 34.07
Asbestic.....	12,854	12,850	1.00
	48,465	\$ 1,226,352	\$ 25.30

TABLE 2.

ASBESTUS.

ASBESTUS.

PRODUCTION, ETC.—1880 TO 1895.

Calendar Year.	PRODUCTION.			Exports, Average value per ton.
	Tons (2,000 lbs.)	Value.	Average value per ton.	
		\$	\$ cts.	\$ cts.
1880.....	380	24,700	65.00	} Exports taken as production.
1881.....	540	35,100	65.00	
1882.....	810	52,650	65.00	
1883.....	955	68,750	71.98	
1884.....	1,141	75,097	65.80	
1885.....	2,440	142,441	58.37	
1886.....	3,458	206,251	59.64	
1887.....	4,619	226,976	49.14	
1888.....	4,404	255,007	57.90	
1889.....	6,113	426,554	69.77	
1890.....	9,860	1,260,240	127.81	75.52
1891.....	9,279	999,878	107.75	70.07
1892.....	6,082	390,462	64.19	69.35
1893.....	6,331	310,156	49.02	57.24
1894.....	7,630	420,825	55.15	59.82
1895.....	8,756	368,175	42.05	56.66

TABLE 3.

ASBESTUS.

EXPORTS.

Calendar Year.	Tons.	Value,	Average value per ton.
1892.....	5,380	\$373,103	\$69.35
1893.....	5,917	338,707	57.24
1894.....	7,987	477,837	59.82
1895.....	7,442	421,690	56.66
1896.....	11,842	567,967	47.96
1897.....	15,570	473,274	30.40
1898.....	15,346	494,012	32.19
1899.....	17,883	473,148	26.46
1900.....	16,993	693,105	39.61
1901.....	32,269	1,069,918	33.16
1902.....	31,074	995,071	32.02
1903.....	31,780	891,033	28.04
1904.....	37,272	1,160,887	31.14

ASBESTUS.

TABLE 4.
ASBESTUS.
IMPORTS.

Fiscal Year.	Value.	Fiscal year.	Value.
1885.....	\$ 674	1895.....	\$26,094
1886.....	6,831	1896.....	23,900
1887.....	7,836	1897.....	19,032
1888.....	8,793	1898.....	26,389
1889.....	9,943	1899.....	32,607
1890.....	13,250	1900.....	43,455
1891.....	13,298	1901.....	50,829
1892.....	14,090	1902.....	52,464
1893.....	19,181	1903.....	75,465
1894.....	20,021	*1904.....	83,827

*Asbestos in any form other than crude, and all manufactures of. Duty 25 p.c.

Details of the industry, mines in operation during 1904, description of mills, etc., will be found in the yearly report of the Inspector of Mines for the Province of Quebec. It is stated that during 1904, there were 1775 workmen employed for periods of from 5 to 12 months, receiving \$460,000 in wages.

Below is given a list of companies engaged in asbestos mining or in the asbestos trade :—

Bell's Asbestos Company Ltd., Geo. R. Smith, Mgr., Thetford Mines, Que.

King's Asbestos Mines, B. Bennett, Mgr., Thetford Mines, Que.

Johnson's Company, Thetford Mines, Que,

Beaver Asbestos Company, Ltd., C. H. Van Nostrand, Secretary,
220 Broadway, New York.

Standard Asbestos Company, Ltd., R. T. Hopper & Co., Montreal,
Que.

Manhattan Asbestos Company, Black Lake, Que.

Glasgow and Montreal Asbestos Company. Black Lake, Que.

Canadian Asbestos Company, B. Marcuse, secretary, Montreal, Que.

Union Asbestos Mines, Black Lake, Que.

Black Lake Chrome and Asbestos Co., 1724 Notre Dame St.,
Montreal, Que.

James Reed, M.D., Reedsdale, Que.

American Asbestos Company, Ltd., Black Lake, Que.

Asbestos and Asbestic Co., Ltd., Danville, Que.

Quebec Asbestos Co., Sherbrooke, Que.

Broughton Asbestos Co. East Broughton Sta., Que.

Brompton Lake Asbestos Co., B. Greenshield, Montreal, Que.

Ottawa Asbestos Mining Co., Ottawa, Ont.

Syracuse Asbestos Company, Black Lake, Que.

COAL.

The production of coal for the year 1904 reached a total tonnage of COAL. 8,254,595 tons representing a value of \$16,592,231. This amount represents 27 per cent of the total mineral production of Canada for the year. For the first time since 1897, coal has regained the first place as contributor to our total mineral production. It was in that year that the discovery of gold in the Yukon began to increase the figure of output of that metal to an extent which made coal take a second place among the minerals which contributed the largest proportional values. However, there has been since, a steady increase of the coal figures from year to year, while on the other hand the Yukon gold production, after having reached a zenith in 1900, has since shown signs of diminution, and this year the total gold stands slightly below coal in the table of proportionate values of different mineral products. (*See Introduction*).

In the tables which follow, 1, 2 and 3, statistics are given which allow comparison of the coal production of 1904 with that of the previous year.

TABLE 1.

COAL.

PRODUCTION BY PROVINCES, 1902, 1903 and 1904.

Province.	1902.		1903.		1904.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
Nova Scotia.....	5,161,316	9,216,636	5,653,338	10,095,246	5,596,241	9,993,288
British Columbia	1,808,441	4,844,040	1,676,581	4,490,844	1,862,625	4,989,174
North-west Territories including Yukon	478,129	1,110,521	614,445	1,316,743	786,617	1,591,545
New Brunswick.	18,795	39,680	16,000	40,000	9,112	18,224
Total	7,466,681	15,210,877	7,960,364	15,942,833	8,254,595	16,592,231

COAL.

TABLE 2.

COAL.

PRODUCTION. COMPARISON OF 1903 AND 1904.

Province	INCREASE OR DECREASE.			
	Tons.	Per cent.	Value. \$	Per cent.
Nova Scotia	<i>d</i> 57,097	<i>d</i> 1·01	<i>d</i> 101,958	<i>d</i> 1·01
British Columbia.....	<i>i</i> 186,044	<i>i</i> 11·09	<i>i</i> 498,330	<i>i</i> 11·09
North-west Territories includ- ing Yukon.....	<i>i</i> 172,72,	<i>i</i> 28·02	<i>i</i> 274,802	<i>i</i> 20·87
New Brunswick.....	<i>d</i> 6,888	<i>d</i> 43·05	<i>d</i> 21,776	<i>d</i> 54·44
Dominion.....	<i>i</i> 294,231	<i>i</i> 3·7	<i>i</i> 692,050	<i>i</i> 4·07

i Increase. *d* Decrease.

TABLE 3.

COAL.

ANNUAL PRODUCTION SHOWING THE INCREASE OR DECREASE EACH YEAR

Calendar Year.	Tons.	Value.	Average Value per Ton.	Increase (<i>i</i>) or Decrease (<i>d</i>) in Tonnage.	Incr. (<i>i</i>) or Deer. (<i>d</i>) per cent.
1886.....	2,116,653	\$3,739,840	\$1 77	.....	.....
1887.....	2,429,330	4,388,206	1 81	<i>i</i> 312,677	<i>i</i> 14·8
1888.....	2,602,552	4,674,140	1 80	<i>i</i> 173,222	<i>i</i> 7·1
1889.....	2,658,303	4,894,287	1 84	<i>i</i> 55,751	<i>i</i> 2·1
1890.....	3,084,682	5,676,247	1 84	<i>i</i> 426,379	<i>i</i> 16·0
1891.....	3,577,749	7,019,425	1 96	<i>i</i> 493,067	<i>i</i> 16·0
1892.....	3,287,745	6,363,757	1 94	<i>d</i> 290,004	<i>d</i> 8·1
1893.....	3,783,499	7,359,080	1 95	<i>i</i> 495,754	<i>i</i> 15·1
1894.....	3,847,070	7,429,468	1 93	<i>i</i> 63,571	<i>i</i> 1·7
1895.....	3,478,344	6,739,153	1 94	<i>d</i> 368,726	<i>d</i> 9·6
1896.....	3,745,716	7,226,462	1 93	<i>i</i> 267,372	<i>i</i> 7·7
1897.....	3,786,107	7,303,597	1 93	<i>i</i> 40,391	<i>i</i> 1·1
1898.....	4,173,108	8,224,288	1 97	<i>i</i> 387,001	<i>i</i> 10·2
1899.....	4,925,051	10,283,497	2 09	<i>i</i> 751,943	<i>i</i> 18·0
1900.....	5,777,319	13,742,178	2 38	<i>i</i> 852,268	<i>i</i> 17·3
1901.....	6,486,325	12,699,243	1 96	<i>i</i> 709,006	<i>i</i> 12·3
1902.....	7,466,681	15,210,877	2 04	<i>i</i> 980,356	<i>i</i> 15·1
1903.....	7,960,364	15,942,833	2 00	<i>i</i> 493,683	<i>i</i> 6·6
1904.....	8,254,595	16,592,231	2 01	<i>i</i> 294,231	<i>i</i> 3·7

SESSIONAL PAPER No. 26a

The percentage of production to be credited to the several provinces at various periods since 1874 is shown in the following table :—

Province.	1874.	1880.	1890.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
Nova Scotia.	91	79	71	61·4	63·9	62·7	64·1	69·1	71·0	67·8
B. Columbia.	8	20	25	30·3	29·0	31·0	29·6	24·2	21·0	22·5
N. W. Ter- ritories .. New Bruns.)	.....	.....	4	8·3	7·1	6·3	6·3	6·7	8·0	9·7

A glance at the above tables will give a general idea of the Canadian coal industry, such as the proportion contributed by each province, the increases and decreases for 1904 over 1903 etc.

The total tonnage shows an increase of 294,231, equal to 3·7 per cent, for which British Columbia and the Northwest Territories are wholly responsible. The two eastern provinces, Nova Scotia and New Brunswick, show slight decreases. However, the decreases are unlikely to be permanent, as they are almost wholly due to a decrease in the output of two of the largest operators, who have been actively pushing their development work, to the detriment of the production.

In the Northwest Territories the increase has been due to a growing activity evenly distributed over the different fields. A great part of the production is used for domestic purposes, and this market of course is growing from year to year as the country becomes more and more settled. The produce of the mines is practically the only fuel available over immense tracts of agricultural and ranching country,

In British Columbia the increase is proportionately distributed among the two producing fields of Vancouver Island and Crows Nest Pass. In the former field, the increase is due to a larger Canadian consumption of coal and somewhat greater exports, whereas in the Crows Nest, an increase in the manufacture of coke is responsible for the higher figure.

5-6 EDWARD VII., A. 1906

COAL.

The following tables give the statistics of exports and imports of coal.

TABLE 4.

COAL.
EXPORTS.

CALENDAR YEAR.	PRODUCE OF CANADA.	NOT PRODUCE.	CALENDAR YEAR.	PRODUCE OF CANADA.	NOT PRODUCE.
	Tons.	Tons.		Tons.	Tons.
1873.....	420,683	5,403	1889.....	665,315	89,294
1874.....	310,988	12,859	1890.....	724,486	82,534
1875.....	250,348	14,026	1891.....	971,259	77,827
1876.....	248,638	4,995	1892.....	823,733	93,988
1877.....	301,317	4,829	1893.....	960,312	102,827
1878.....	327,959	5,468	1894.....	1,103,694	89,786
1879.....	306,648	8,468	1895.....	1,011,235	96,836
1880.....	432,188	14,217	1896.....	1,106,661	116,774
1881.....	395,382	14,245	1897.....	986,130	101,848
1882.....	412,682	37,576	1898.....	1,150,029	99,189
1883.....	486,811	44,388	1899.....	1,293,169	101,004
1884.....	474,405	62,665	1900.....	1,787,777	62,776
1885.....	427,937	71,003	1901.....	1,573,661	53,894
1886.....	520,703	78,443	1902.....	2,090,268	23,453
1887.....	580,965	89,098	1903.....	1,954,629	27,138
1888.....	588,627	84,316	1904.....	1,557,412	27,308

TABLE 5.

COAL.

EXPORTS.—NOVA SCOTIA AND BRITISH COLUMBIA.

Calendar Year.	Nova Scotia.		*British Columbia.	
	Tons.	Value.	Tons.	Value.
1874.....	252,124	\$647,539	51,001	\$ 278,180
1875.....	179,626	404,351	65,842	356,018
1876.....	126,520	263,543	116,910	627,754
1877.....	173,389	352,453	118,252	590,263
1878.....	154,114	293,795	165,734	698,870
1879.....	113,742	203,407	186,094	608,845
1880.....	199,552	344,148	219,878	775,008
1881.....	193,081	311,721	187,791	622,965
1882.....	216,954	390,121	179,552	628,437
1883.....	192,795	336,088	271,214	946,271
1884.....	222,709	430,330	245,478	901,440
1885.....	176,287	349,650	250,191	1,000,764
1886.....	240,459	441,693	274,466	960,649
1887.....	207,941	390,738	356,657	1,262,552
1888.....	165,863	330,115	405,071	1,605,650
1889.....	186,608	396,830	470,683	1,918,263
1890.....	202,387	426,070	508,882	1,977,191
1891.....	194,867	417,816	767,734	2,958,695
1892.....	181,547	407,980	599,716	2,317,734
1893.....	203,198	470,695	708,228	2,693,747
1894.....	310,277	633,398	770,439	2,855,216
1895.....	241,091	534,479	728,283	2,692,562
1896.....	380,149	787,270	679,799	2,507,752
1897.....	307,128	642,754	630,341	2,221,737
1898.....	309,158	629,363	813,843	2,948,428
1899 [†]	459,260	827,941	781,809	2,947,369

*See foot-note, table 16.

†Since 1899, exports by provinces have not been published in Trade and Navigation Report.

SESSIONAL PAPER No. 26a

TABLE 6.

COAL.

COAL.

IMPORTS OF BITUMINOUS COAL.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1880.....	457,049	\$1,220,761	1893.....	1,603,154	3,967,764
1881.....	587,024	1,741,568	1894.....	1,359,509	3,315,094
1882.....	636,374	1,992,081	1895.....	1,444,928	3,321,387
1883.....	911,629	2,996,198	1896.....	1,538,489	3,299,025
1884.....	1,118,615	3,613,470	1897.....	1,543,476	3,254,217
1885.....	1,011,875	3,197,539	1898.....	1,684,024	3,179,595
1886.....	930,949	2,591,554	1899.....	2,171,358	3,691,946
1887.....	1,149,792	3,126,225	1900.....	2,439,764	4,310,964
1888.....	1,231,234	3,451,661	1901.....	2,516,392	4,956,025
1889.....	1,248,540	3,255,171	1902.....	3,047,392	5,712,058
1890.....	1,409,282	3,523,959	1903.....	3,511,412	7,776,717
1891.....	1,598,855	4,060,896	1904*	4,053,900	9,108,208
1892.....	1,615,220	4,099,221			

*Duty, 53c. per ton.

TABLE 7.

COAL.

IMPORTS OF ANTHRACITE COAL.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1880.....	516,729	\$1,509,960	1893.....	1,500,550	\$ 6,355,285
1881.....	572,092	2,325,937	1894.....	1,530,522	6,354,040
1882.....	638,273	2,666,356	1895.....	1,404,342	5,350,627
1883.....	754,891	3,344,936	1896.....	1,574,355	5,667,096
1884.....	868,000	3,831,283	1897.....	1,457,295	5,695,168
1885.....	910,324	3,909,844	1898.....	1,460,701	5,874,685
1886.....	995,425	4,028,050	1899.....	1,745,460	6,490,509
1887.....	1,100,165	4,423,062	1900.....	1,654,401	6,602,912
1888.....	†2,138,627	5,291,875	1901.....	1,933,283	7,923,950
1889.....	1,291,705	5,199,481	1902.....	1,652,451	7,021,939
1890.....	1,201,335	4,595,727	1903.....	1,456,713	7,028,664
1891.....	1,399,067	5,224,452	1904*	2,275,018	10,461,223
1892.....	1,479,106	5,640,346			

* Coal anthracite, and anthracite coal dust. Duty free.

† In Table 7, Imports of Anthracite Coal, a very considerable increase will be noticed in 1888 over 1887, an increase of over ninety-four per cent, the falling off again in 1889 being quite as remarkable. The average values per ton for the three years 1887, 1888 and 1889, were \$4.02, \$2.47 and \$4.03 respectively. Although a duty of fifty cents per ton on anthracite coal was removed May 13, 1887, it is hardly thought this would account for the changes indicated, and unless some error may possibly have crept into the Trade and Navigation Report, no explanation is available.

COAL.

TABLE 8.

COAL.

IMPORTS OF COAL DUST.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1880.....	3,565	\$ 8,877	1893.....	109,585	44,474
1881.....	337	666	1894.....	117,573	49,510
1882.....	471	900	1895.....	181,318	52,221
1883.....	8,154	10,082	1896.....	210,386	53,742
1884.....	12,782	14,600	1897.....	225,562	59,609
1885.....	20,185	20,412	1898.....	229,445	45,556
1886.....	36,230	36,996	1899.....	276,547	44,717
1887.....	31,401	33,178	1900.....	330,174	98,349
1888.....	28,808	34,730	1901.....	414,432	275,559
1889.....	39,980	47,139	1902.....	489,548	264,550
1890.....	53,104	29,818	1903.....	550,883	420,317
1891.....	60,127	36,130	1904 [*]	608,041	544,123
1892.....	82,091	39,840			

* Duty, 20 p. c., not over 13c. per ton.

Ontario is of course largely dependent on imports from the United States for its supply of bituminous coal. Western Quebec and Manitoba also import large quantities. This is mainly used in local industries. For domestic use the eastern provinces are altogether dependent on the anthracite from the United States, whereas the western provinces derive part of their domestic supply from the Cascades coal fields on the eastern slope of the Rocky Mountains through which runs the Canadian Pacific Railway, where a very good quality of anthracite is produced, and from some parts of the coal fields along the Crows Nest Pass Railway branch ; which last source yields a bituminous coal, high in fixed carbon, greatly prized for household purposes.

To offset the imports from the United States, both Nova Scotia and British Columbia shew a substantial coal export trade the main market for which, are the seaboard ports of the Atlantic and of the Pacific coasts, although quite an appreciable quantity is also shipped to Montana by rail, from the Crows Nest field.

To sum up, however, while only about half the quantity of coal consumed in Canada is derived from Canadian mines, such quantities are exported that we actually produce about 60 per cent of our requirements. The following statement will show at a glance the comparison between the Canadian imports, exports, and consumption of coal during the year 1904. It is of course to be regretted that so much coal has to be imported, when we have unlimited supplies of it, but the middle provinces of Canada are so distant from the producing Canadian coal fields, that they will always have to draw their supply chiefly from the less remote United States coal districts.

SESSIONAL PAPER No. 26a

Production, Table 3.....	8,254,595	COAL.
Exports of coal the produce of Canada, Table 4.....	1,557,412	
Home consumption of Canadian coal.....	6,697,183	
Imports of bituminous, anthracite and coal dust, Tables 6, 7 and 8	6,936,959	
Exports of coal not the produce of Canada.....	27,308	
Home consumption of imported coal.....	6,909,651	
Total consumption of coal in Canada.....	13,606,834	

TABLE 9.

COAL.

CONSUMPTION OF COAL IN CANADA.

Calendar Year.	Canadian.	Imported.	Total.	Percentage Canadian.	Percentage Imported.	Consump- tion per capita.
	Tons.	Tons.	Tons.			Tons.
1886.....	1,595,950	1,884,161	3,480,111	45·9	54·1	·758
1887.....	1,848,365	2,192,260	4,040,625	45·7	54·3	·871
1888.....	2,013,925	3,314,353	5,328,278	37·8	62·2	1·137
1889.....	1,992,988	2,490,931	4,483,919	44·4	55·6	·946
1890.....	2,360,196	2,581,187	4,941,383	47·8	52·2	1·031
1891.....	2,606,490	2,980,222	5,586,712	46·7	53·3	1·153
1892.....	2,464,012	3,082,429	5,546,441	44·4	55·6	1·133
1893.....	2,823,187	3,110,462	5,933,649	47·6	52·4	1·198
1894.....	2,743,376	2,917,818	5,661,194	48·5	51·5	1·130
1895.....	2,467,109	2,933,752	5,400,861	45·7	54·3	1·066
1896.....	2,639,055	3,206,456	5,845,511	45·1	54·9	1·140
1897.....	2,799,977	3,124,485	5,924,462	47·3	52·7	1·143
1898.....	3,023,079	3,274,981	6,298,060	48·0	52·0	1·200
1899.....	3,631,882	4,092,361	7,724,243	47·0	53·0	1·454
1900.....	3,989,542	4,361,563	8,351,105	47·8	52·2	1·561
1901.....	4,912,664	4,810,213	9,722,877	50·5	49·5	1·810
1902.....	5,376,413	5,165,938	10,542,351	51·0	49·0	1·927
1903.....	6,005,735	5,491,870	11,507,605	52·2	47·8	2·055
1904.....	6,697,183	6,909,651	13,606,834	49·2	50·8	2·346

If the consumption of coal is to be regarded as one of the indices of prosperity of a country, the table above will show gratifying results. Not only has the total tonnage used, greatly increased, but the per capita consumption shows from year to year a steady growth, which for the last decade does not once show retrogression.

NOVA SCOTIA.—The total production of Nova Scotia, shows a slight decrease over that for the previous year. This, however, is not to be taken as a sign of decreasing activity in the coal industry of the province. The companies which are mainly responsible for the lower figure, are two of the very important producers, viz., the Dominion Coal Company in Cape Breton county, and the Acadia Coal Company in Pictou county. With great foresight, these two companies have been pushing the development work of their collieries, and next year it is expected that the output will more than make up the slight falling off of this year.

COAL.
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Scotia.

TABLE 10.
COAL.
NOVA SCOTIA :—OUTPUT, SALES, COLLIERY CONSUMPTION, AND PRODUCTION.

Calendar Year.	Output, Tons, 2,240 lbs.	Sales, Tons, 2,240 lbs.	Colliery Consumption, Tons, 2,240 lbs.	Production* Tons, 2,240 lbs.	Output, Tons, 2,000 lbs.	Sales, Tons, 2,000 lbs.	Colliery Consumption, Tons, 2,000 lbs.	Production* Tons, 2,000 lbs.	Price per Ton, 2,240 lbs.	Value of production.
1872.....	880,950	785,914	110,341	896,255	986,664	880,224	123,582	1,003,806	\$1 75	\$1,508,446
1873.....	1,051,467	881,106	108,398	989,504	1,177,643	986,889	121,406	1,108,245	1 75	1,731,632
1874.....	872,720	749,127	119,582	868,709	977,446	839,022	133,932	972,954	1 75	1,520,240
1875.....	781,165	706,795	124,110	836,905	874,905	791,610	139,003	930,613	1 75	1,454,084
1876.....	709,646	634,207	113,788	747,995	794,804	710,312	127,443	837,755	1 75	1,308,991
1877.....	777,496	687,065	98,841	785,906	848,396	766,513	110,702	880,215	1 75	1,375,339
1878.....	770,603	693,511	88,627	782,138	863,076	776,732	99,262	875,994	1 75	1,368,741
1879.....	788,271	688,624	84,787	773,419	882,863	771,259	94,961	866,220	1 75	1,353,469
1880.....	1,032,710	954,659	96,831	1,051,490	1,156,635	1,063,216	108,451	1,177,669	1 75	1,840,108
1881.....	1,124,270	1,035,014	107,888	1,142,902	1,259,183	1,159,216	120,884	1,280,050	1 75	2,000,079
1882.....	1,365,811	1,250,179	111,381	1,361,560	1,523,708	1,400,200	124,747	1,524,947	1 75	2,382,730
1883.....	1,422,553	1,297,523	111,949	1,409,472	1,593,259	1,453,226	125,383	1,578,609	1 75	2,466,576
1884.....	1,380,295	1,261,650	116,769	1,378,419	1,556,011	1,413,048	130,781	1,543,829	1 75	2,412,233
1885.....	1,352,205	1,254,510	127,624	1,382,134	1,514,470	1,405,051	142,939	1,547,990	1 75	2,418,735
1886.....	1,502,611	1,373,666	142,421	1,516,087	1,682,924	1,538,506	159,512	1,698,018	1 75	2,653,152
1887.....	1,670,830	1,519,684	139,777	1,659,461	1,871,330	1,702,046	156,550	1,838,596	1 75	2,904,037
1888.....	1,776,128	1,576,692	157,443	1,734,135	1,989,263	1,765,895	176,336	1,942,231	1 75	3,034,735
1889.....	1,756,279	1,535,107	158,131	1,713,238	1,967,032	1,741,720	177,107	1,918,827	1 75	2,998,167
1890.....	1,984,001	1,786,111	161,240	1,947,351	2,222,081	2,000,444	180,589	2,181,033	1 75	3,407,804
1891.....	2,044,784	1,849,945	174,983	2,024,928	2,290,158	2,071,938	195,981	2,267,919	1 75	3,543,624
1892.....	2,042,784	1,852,934	175,992	2,024,928	2,290,158	2,071,938	195,981	2,267,919	1 75	3,543,624
1893.....	2,223,042	1,972,543	205,425	2,182,968	2,489,807	2,214,848	230,076	2,444,924	1 75	3,820,194
1894.....	2,250,631	2,050,920	186,206	2,257,126	2,520,707	2,308,270	219,751	2,527,982	1 75	3,949,970
1895.....	1,939,756	1,793,098	193,639	2,239,803	2,567,796	2,308,270	216,875	2,295,145	1 75	3,476,790
1896.....	2,232,675	2,046,828	192,975	1,986,737	2,239,727	2,008,270	216,875	2,295,145	1 75	3,476,790
1897.....	2,340,031	2,044,672	181,716	2,226,388	2,620,835	2,290,032	216,132	2,508,579	1 75	3,919,655
1898.....	2,262,656	2,121,126	167,428	2,288,554	2,534,175	2,375,661	187,519	2,493,554	1 75	3,896,179
1899.....	2,865,443	2,633,989	177,460	2,811,449	3,209,296	2,956,067	198,755	2,563,180	1 75	4,004,970
1900.....	3,298,791	2,998,737	236,563	3,235,300	3,694,646	3,358,585	264,951	3,623,536	2 00	5,622,808
1901.....	3,821,633	3,411,127	301,434	3,712,561	4,279,557	3,820,462	337,006	4,158,068	1 75	6,406,982
1902.....	4,729,480	4,229,120	379,198	4,608,318	5,292,538	4,736,614	424,702	5,161,316	2 00	9,216,636
1903.....	5,215,562	4,565,720	481,903	5,047,623	5,841,429	5,113,607	539,731	5,653,388	2 00	10,095,246
1904.....	5,131,985	4,551,740	444,904	4,996,644	5,747,823	5,097,949	498,292	5,396,241	2 00	9,993,288

* This Production is obtained by adding Sales and Colliery Consumption. For sales previous to 1872, see report of the Department of Mines, Nova Scotia, 1883, page 68.

SESSIONAL PAPER No. 26a

TABLE 11.

COAL.

NOVA SCOTIA :—COAL TRADE BY COUNTIES.

CALENDAR YEAR.	CUMBERLAND.		PICTOR.		CAPE BRETON.		OTHER COUNTIES.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.
1st quarter.....	154,643	122,989	179,234	151,502	813,719	526,088	44,706	25,334
2nd ".....	198,426	173,046	179,004	157,538	1,116,540	1,029,237	90,231	64,936
3rd ".....	177,815	156,401	171,563	157,501	1,092,956	1,153,323	111,657	89,858
4th ".....	200,432	168,673	181,127	155,817	950,218	904,571	85,552	61,125
Total, 1904.....	731,316	621,169	716,928	622,358	3,973,433	3,613,169	332,146	241,253
" 1903.....	673,332	590,171	792,164	695,120	4,073,824	3,590,565	296,110	237,750

COAL.

COAL.

TABLE 12.

COAL.

NOVA SCOTIA:—OUTPUT BY COLLIERIES DURING THE CALENDAR YEAR 1904.

Colliery.	Tons, 2,000 lbs.	Colliery.	Tons, 2,000 lbs.
<i>Cumberland County.</i>		<i>Inverness County.</i>	
Maritime Coal Co.....	54,053	Port Hood Coal Co.....	84,825
Fundy Coal Co.....	11,326	Mabou Coal Mining Co...	6,792
Canada Coal & Railway Co.	44,717	Inverness Ry. and Coal Co	233,502
Minudie Coal Co.....	43,174		
Ripley & Blenckorn.....	2,032	<i>Victoria County.</i>	
Cumberland Ry. & Coal Co.	566,708	Cape Breton Coal Co.....	7,027
Spratheona Coal Co.....	9,306		
		<i>Cape Breton County.</i>	
<i>Pictou County.</i>		Sydney Coal Co.....	8,138
Acadia Coal Co.....	344,417	Dominion Coal Co.....	3,386,345
Intercolonial Coal Co.	297,427	N. Scotia Steel & Coal Co.	533,703
Nova Scotia Steel and Coal Co	69,084	Gowrie and Blockhouse collieries.....	45,247
		Total.....	5,747,823

The Dominion Coal Company has made a start towards developing the large submarine areas which they hold along the eastern coast of Cape Breton. After a series of conferences between the government mining inspector and the company's officials an agreement was reached as to size of pillars and rooms, main ways, barriers, thickness of corners, etc., both the safety of the workmen and the interests of the company having been considered.

The Dominion Coal Company is also opening up a new vein called Dominion No. 6 on the tongue of land between Big Glace Bay and Schooner Pond. This will be worked by slopes on the Phelan Seam. It is expected to be in shipping order in the spring of 1905. All the other collieries of the company worked steadily during the year.

The Cape Breton Coal, Iron and Railway Company have been going on with their development work at Cochrane Lake. The intention is to establish a large modern colliery; a town site (Broughton) has been laid out and a spur of railroad is being built to connect the mine with the Sydney and Louisburg Railway.

All the other mines of the Island of Cape Breton, produced steadily.

In Pictou county, the Acadia Coal Company did a great deal of development work, somewhat to the detriment of the output. This company is now sinking a pair of shafts to tap the different seams of the basin, and the intention is to ultimately concentrate all

SESSIONAL PAPER No. 26a

the hoisting operations on this point. The other companies of this COAL district, produced steadily.

In Cumberland county, the heaviest producer is the Cumberland Railway and Coal Company, who operate the Spring Hill mines. Their production shows an increase over last year.

The Canada Coal and Railway Company, Joggins Mines, experienced a great deal of trouble on account of a fire and a strike. The output was materially affected by these causes, and is much lower than that of last year. The Chignecto colliery has been taken over by the Maritime Coal and Railway Company, Ltd., who have doubled last year's production and who pushed development work very actively.

The following table shows the markets to which the Nova Scotia coal finds its way. It will be observed that outside of the province itself, the main outlets are the Province of Quebec, and the exports to the United States.

TABLE 13.

COAL.

NOVA SCOTIA:—DISTRIBUTION OF COAL SOLD.

Markets.	Calendar Years.					
	1902.		1903.		1904.	
	Tons, 2,000 lbs.	Per cent.	Tons, 2,000 lbs.	Per cent.	Tons, 2,000 lbs.	Per cent.
Nova Scotia, transported by land	468,658	9·9	727,122	14·2	918,822	18·0
Nova Scotia, transported by sea	1,175,644	24·8	977,756	19·1	724,289	14·2
Total, Nova Scotia...	1,644,302	34·7	1,704,878	33·3	1,643,111	32·2
New Brunswick.....	358,664	7·6	435,537	8·5	474,053	9·3
Prince Edward Island.....	70,316	1·5	88,649	1·7	95,177	1·9
Quebec.....	1,492,902	31·5	1,609,205	31·5	1,916,384	37·6
Newfoundland.....	118,041	2·5	155,751	3·1	155,794	3·1
United States.....	1,004,650	21·2	1,009,420	19·7	730,658	14·3
West Indies.....	6,700	·1	.....	.....	.....	.....
Other countries.....	41,039	·9	110,167	2·2	82,772	1·6
Total	4,736,614	100·0	5,113,607	100·0	5,097,949	100·0

NEW BRUNSWICK.—The greater proportion of the New Brunswick production is derived from the Grand Lake district, which has now greatly increased shipping facilities, owing to the completion of the

COAL.

railroad which connects Newcastle and Minto to Norton on the Inter-colonial Railroad. Besides this, a great deal of coal is shipped during the summer by barges to St. John and Fredericton. The coal operations in the district are on a small scale, the seams are thin, and a great deal of dead work has to be done to allow sufficient height to work.

Some work has also been done in Kent county, the Coal Branch district, and a spur of railroad has been built, which should be a great help to the industry.

TABLE 14.

COAL.

NEW BRUNSWICK :—PRODUCTION.

Calendar Year.	Tons.	Value.	Value per ton.
1887.....	10,040	\$ 23,607	\$2 35
1888.....	5,730	11,050	1 93
1889.....	5,673	11,733	2 07
1890.....	7,110	13,850	1 95
1891.....	5,422	11,030	2 03
1892.....	6,768	9,375	1 39
1893.....	6,200	9,837	1 59
1894.....	6,469	10,264	1 59
1895.....	9,500	14,250	1 50
1896.....	7,500	11,250	1 50
1897.....	6,000	9,000	1 50
1898.....	6,160	9,240	1 50
1899.....	10,528	15,792	1 50
1900.....	10,000	15,000	1 50
1901.....	17,630	51,857	2 94
1902.....	18,795	39,680	2 11
1903.....	16,000	40,000	2 50
1904.....	9,112	18,224	2 00

TABLE 15.

COAL.

COAL.

NORTH-WEST TERRITORIES :—PRODUCTION.

Calendar Year.	Tons.	Value.	Value per ton.
1887.....	74,152	\$ 157,577	\$ 2 13
1888.....	115,124	183,354	1 59
1889.....	97,364	179,640	1 85
1890.....	128,953	198,498	1 54
1891.....	174,131	437,243	2 51
1892.....	184,370	469,930	2 55
1893.....	238,395	598,745	2 51
1894.....	199,991	488,980	2 45
1895.....	185,654	414,064	2 23
1896.....	225,868	606,891	2 69
1897.....	267,163	667,908	2 50
1898.....	340,088	825,220	2 43
1899.....	334,600	811,500	2 43
1900.....	351,950	839,375	2 38
1901.....	391,139	1,008,917	2 58
1902.....	478,129	1,110,521	2 32
1903.....	614,445	1,316,743	2 14
1904.....	786,617	1,591,545	2 02

NORTH-WEST TERRITORIES.—The production, as may be seen by glancing at table 15, is yearly increasing at a rapid rate, following in this the development of this part of Canada. In the North-west Territories, coal mining is mainly carried on in the Estevan district, which is in the south-eastern corner of Assiniboia; on the Crows Nest Branch of the Canadian Pacific Railway, between Lethbridge and the Rocky Mountains; in the Cascade Basin on the main line of the C.P.R., and around Edmonton. In each of these districts, great developments have taken place during 1904, and the production next year will be considerably increased. In the Estevan field the heaviest producers are the Souris Coal Company. But the C.P.R. Mining and Metallurgical Department are doing a great deal of development and constructing an important surface plant at Bienfait.

Along the Crows Nest Pass Railway, several new collieries are being added to the old producers. The International Coal and Coke Company are working very actively at their Coleman colliery, where they are putting up a very modern and complete plant. The Breckenridge Lund Coal Company intend to establish at Lundbreck a complete and up-to-date colliery. Among the older producers, the Lethbridge colliery has worked very steadily. The Frank colliery, of the Canadian American Coal and Coke Company, which had been so seriously

COAL.

affected by the great landslide of April, 1903, has again started to ship, and is now in good working order. The West Canadian Colliery Company has worked two collieries, at Lille and Bellevue, near Frank. At the Bellevue colliery, the work has been mainly of a development nature. In the Cascade Basin, the mine at Canmore continued to produce steadily. One of the features of the year, has been the abandonment of the mine at Anthracite, which had been a good producer for a great many years. The product of the mine was an anthracite mainly used for domestic purposes. This kind of coal will in the future be mined by the Pacific Coal Company, who are establishing a large colliery at Bankhead, three miles north of Banff.

The mines in the vicinity of Edmonton do not show any special features. They worked more or less steadily throughout the year. There is little doubt, however, that a large and steady increase of the coal production of the North-west Territories may be looked forward to, following the growth and development of that part of Canada.

TABLE 16.

COAL.

COAL.

BRITISH COLUMBIA :—PRODUCTION.

Calendar Year.	Output Tons, 2,240 lbs.	Home Consumption, Tons, 2,240 lbs.	Sold for Export, Tons, 2,240 lbs. †	PRODUCTION.*		Price per ton, 2,240 lbs	Value.
				Tons, 2,240 lbs.	Tons, 2,000 lbs.		
						\$	\$
1836-52..	10,000	From 1836 to 1873 inclusive, the output is taken as production.			11,200	4 00	40,000
1852-59..	25,798				28,446	4 00	101,592
1859-61....	1,989				2,228	4 00	7,956
1860.....	14,247				15,957	4 00	56,988
1861.....	13,774				15,427	4 00	55,096
1862.....	18,118				20,292	4 00	72,472
1863.....	21,345				23,906	4 00	85,380
1864.....	28,632				32,068	4 00	114,528
1865.....	32,819				36,757	4 00	131,276
1866.....	25,115				28,129	4 00	100,460
1867....	31,239				34,988	4 00	124,956
1868.....	44,005				49,286	4 00	176,020
1869.....	35,802				40,098	4 00	143,208
1870.....	29,843				33,424	4 00	119,372
1871-2-3..	148,459				166,274	4 00	593,836
1874.....	81,547	25,023	56,038	81,061	90,788	3 00	243,183
1875.....	110,145	31,252	66,392	97,644	109,361	3 00	292,932
1876.....	139,192	17,856	†122,329	140,185	157,007	3 00	420,555
1877.....	154,052	24,311	115,381	139,692	156,455	3 00	419,076
1878.....	170,846	26,166	164,682	190,848	213,750	3 00	572,544
1879.....	241,301	40,294	192,096	232,390	260,277	3 00	697,170
1880.....	267,595	46,513	225,849	272,362	305,045	3 00	817,086
1881.....	228,357	40,191	189,323	229,514	257,056	3 00	688,542
1882.....	282,139	56,161	232,411	288,572	323,201	3 00	865,716
1883.....	213,299	64,786	149,567	214,353	240,075	3 00	643,059
1884.....	394,070	87,388	306,478	393,866	441,130	3 00	1,181,598
1885.....	365,596	95,227	237,797	333,024	372,987	3 00	999,072
1886.....	326,636	85,987	249,205	335,192	375,415	3 00	1,005,576
1887.....	413,360	99,216	334,839	434,055	486,142	3 00	1,302,165
1888.....	489,301	115,953	365,714	481,667	539,467	3 00	1,445,001
1889.....	579,830	124,574	443,675	568,249	636,439	3 00	1,704,747
1890.....	678,140	177,075	508,270	685,345	767,586	3 00	2,056,035
1891.....	1,029,077	202,697	806,479	1,009,176	1,130,277	3 00	3,027,528
1892.....	826,335	196,223	640,579	836,802	937,218	3 00	2,510,406
1893.....	978,294	207,851	768,917	976,768	1,093,980	3 00	2,930,304
1894.....	1,012,953	165,776	827,642	993,418	1,112,628	3 00	2,980,254
1895.....	939,654	188,349	756,334	944,683	1,058,045	3 00	2,834,049
1896.....	894,882	261,984	634,238	896,222	1,003,769	3 00	2,688,666
1897.....	892,296	290,310	619,860	910,170	1,019,390	3 00	2,730,510
1898.....	1,136,485	375,423	752,863	1,128,286	1,263,680	3 00	3,384,858
1899.....	1,306,324	526,058	751,711	1,277,769	1,431,101	3 00	3,833,307
1900.....	1,590,178	685,667	914,184	1,599,851	1,791,833	3 00	4,799,553
1901.....	1,691,557	799,666	914,163	1,713,829	1,919,488	3 00	5,141,487
1902.....	1,611,626	837,871	776,809	1,614,680	1,808,441	3 00	4,844,040
1903.....	1,450,663	947,499	549,449	1,496,948	1,676,581	3 00	4,490,844
1904.....	1,685,698	1,129,465	533,593	1,663,058	1,862,620	3 00	4,989,174

*This production is obtained by adding 'Home Consumption' and 'Sold for Export,' +52,935 of this amount was exported as sales without the division into the 'Home Consumption' and 'Sold for Export.'

†The figures in the 'Sold for Export' column do not agree as they should with those given in Table 5, the only explanation being that the data in the two cases are from different sources, and it has not been possible to find out the cause of the difference.

¶Two months only.

COAL.

For British Columbia the total figures of production for 1904 show a substantial increase over 1903. The increase is mainly due to the larger amount of coal used in making coke. Exports of coal to the United States have slightly fallen off while on the other hand the exports of coke to that country shows a very large increase.

Statistics of coal production for 1904 are given in the annual report of the Minister of Mines as follows :—

SALES AND OUTPUT FOR YEAR. Tons of 2240 lbs.	Tons.		Cwt.	
	Tons.		Cwt.	
Sold for consumption in Canada.....	537,744	.....	.....	.....
" export to U.S.A.....	532,436	.....	.....	.....
" " to other countries	1,157	.....	.....	.....
Total sales.....	.....	.....	1,071,337	.....
Used under colliery boilers, &c.....	159,651	.....	.....	.....
Used in making coke.....	432,070	.....	.....	.....
Total for colliery use.....	.....	.....	591,721	.....
Stock on hand first of year.....	8,130	.....	.....	.....
" " last of year.....	30,770	.....	.....	.....
Lifference added to stock during the year....	.....	.....	22,640	.....
Output of collieries for year.....	.....	.....	1,685,698	.....

Statistics of labour and wages are given in the same report as follows :—

NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &c.

CHARACTER OF LABOUR.	UNDERGROUND.		ABOVE GROUND.		TOTAL.	
	No. of employees	Average daily wage	No. of employees	Average daily wage	No. of employees	Average daily wage
Supervision and clerical assistance.....	89	\$ 6 87	51	\$ 4 50	140	\$ 5 68
Whites--	1,614	3 75	.....	.....	1,614	3 75
Miners.....	.....	2 75	.....	.....	.....	2 75
Miners' helpers.....	.....	2 87	.....	2 50	.....	2 68
Labourers.....	1,378	.....	547	.....	1,925	.....
Mechanics and skilled lab. ....	.....	2 62	.....	3 62	.....	3 02
Boys.....	.....	2 87	.....	1 33	.....	1 60
Japanese.....	17	1 37	28	1 25	45	1 31
Chinese.....	181	1 37	549	1 25	729	1 31
Totals.....	3,278	.....	1,175	.....	4,443	.....

SESSIONAL PAPER No. 26a

Only three fields in British Columbia are yet producing, viz., the **COAL** Nanaimo field and the Comox or Cumberland field, both of which are situated on the east coast of Vancouver Island, and the Crows Nest Pass field in the East Kootenay district. On Vancouver Island the two larger companies operating are, the Western Fuel Company and the Wellington Colliery Company, who ship almost entirely by water, the market being nearly equally divided between American and Canadian ports. In the Crows Nest Pass only one company is producing at present, the Crows Nest Pass Coal Company, which has three collieries, viz. at Coal Creek, Michel and Carbonado. About two-fifths of their output is used for making coke and one-quarter exported to the United States by rail, the balance being consumed in Canada.

There exist other coal fields in British Columbia, some of which could easily be developed, should the demand arise. Even now, in the Nicola Valley, extensive boring and development work is going on. In 1904 there were at least five companies who had started operations in this district. Dr. R. W. Ells has reported at length on these coal fields, in the Summary report of the Geological Survey for 1904 (pages 42 to 69).

Exploration work has been pursued in the Skeena district and extensive seams are reported to have been discovered. These fields, however, will necessarily remain dormant until the construction of the Grand Trunk Pacific line and spurs.

The following figures are interesting as showing the sources of the coal which supplies the Californian market. The very important falling off in the imports, is due to the introduction of crude oil as fuel for a great many purposes.

Whence derived.	1901.	1902.	1903.
	Tons, 2,240 lbs.	Tons, 2,240 lbs.	Tons, 2,240 lbs.
British Columbia.....	710,530	591,732	289,890
Australia.....	175,959	197,328	276,186
England and Wales.....	52,270	95,621	61,580
Scotland.....		3,600	3,495
Eastern (Cumberland and Anthracite)....	27,370	24 133	13,262
Seattle (Washington).....	240,574	165,237	127,819
Tacoma.....	433,817	209,358	256,826
Mount Diablo, Coos Bay and Tesla.....	143,318	111,209	84,277
Japan and Rocky Mountains.....	51,147	47,380	102,219
Totals.....	1,834,785	1,445,598	1,215,554

COAL.

We give below a list of the principal coal producers in Canada.

NOVA SCOTIA—

Dominion Coal Company.....	Glace Bay, C.B.
Nova Scotia Steel and Coal Company....	Sydney Mines, C.B.
Cape Breton Coal, Iron and Railway Co'y...	Broughton, C.B.
Gowrie and Blockhouse Collieries.....	Port Morien, C.B.
Sydney Coal Company, Ltd.....	Sydney Mines, C.B.
Cape Breton Coal Mining Co.....	Newcampellton, C.B.
Inverness Railway and Coal Co.....	Inverness, C.B.
Port Hood Coal Company.....	Port Hood, C.B.
Mabou Coal Mining Co.....	Mabou, C.B.
Nova Scotia Collieries, Ltd.....	Chimney Corner, C.B.
Intercolonial Coal Mining Company.....	Westville, N.S.
Acadia Coal Company, Ltd.....	Stellarton, N.S.
Cumberland Railway and Coal Co., Ltd....	Springhill, N.S.
Canada Coals and Railway Co. Ltd.....	Joggins Mines, N.S.
Minudie Coal Company, Ltd.....	River Hebert, N.S.
Stratheona Coal Company.....	" " "
Maritime Coal Company.....	Chignecto, N.S.
Ripley and Blenkhorn.....	" "
Fundy Coal Company.....	Lower Cove, N.S.

NEW BRUNSWICK :—

New Brunswick Coal and Railway Company....	Norton, N.B.
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NORTH-WEST TERRITORIES :—

Alberta Railway and Irrigation Company.....	Lethbridge, Alta.
The Canadian American, Coal and Coke Co.....	Frank, Alta.
West Canadian Collieries.....	Blairmore, Alta.
International Coal and Coke Company.....	Coleman, Alta.
H. W. McNeil Company.....	Canmore, Alta.
Breckenridge and Lund Coal Co.....	Lundbreck, Alta.
Pacific Coal Company.....	Bankhead, Alta.
C.P.R. Mining and Metallurgical Dept.....	Bienfait, Assa.
Souris Coal Company.....	Coalfields, Assa.
Roche Percee Coal Mining Company.....	Roche Percee, Assa.
Eureka Brick and Coal Co.....	Estevan, Alta.
Edmonton Coal Co.....	Edmonton, Alta.
Mays Coal Mining Co.....	" "
James R. Stewart Mining Co.....	" "
The Knee Hill Coal Co.....	Knee Hill "

SESSIONAL PAPER No. 26a

BRITISH COLUMBIA :—

COAL.

The Crows Nest Coal Co.....	Fernie, B.C.
The Western Fuel Co.....	Nanaimo, V.I., B.C.
Wellington Colliery Co.....	Ladysmith, B.C.
The Nicola Valley Coal Co.....	Spokane, Wash., U.S.A.
The Coutlee Coal and Iron Co.....	Colfax, Was. U.S.A.
The Nicola Coal and Iron Co	Vancouver, B.C.
The Nicola, Kamloops and Similkameen Coal and Railway Co.....	Ottawa, Ont.
The Diamond Vale Coal and Iron Mines, Ltd..	Vancouver, B.C.

YUKON DISTRICT :—

Coal Creek Coal Co., Ltd.....	Dawson, Yukon.
North American Transportation and Trading Co. Cliff Creek Mines	" "
Alaska Exploration Co. Rock Creek Mine.....	" "
R. S. Ames and Geo. Miller, Five Fingers Mine.	" "
White Horse Coal Co.....	White Horse,"

COKE.

The total production of coke for the year 1904 shows a tonnage inferior to that of 1903, but nevertheless the total value has materially increased. This is due to the fact that the British Columbia production has grown very much, and the value per ton is greater in the west than on the Atlantic coast,

TABLE 1.
COKE.
ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Value. per Ton.
1886.....	35,396	\$101,940	\$2.88
1887.....	40,428	135,951	3.36
1888.....	45,373	134,181	2.96
1889.....	54,539	155,043	2.84
1890.....	56,450	166,298	2.95
1891.....	57,084	175,592	3.08
1892.....	56,135	160,249	2.85
1893.....	61,078	161,790	2.65
1894.....	58,044	148,551	2.56
1895.....	53,356	143,047	2.68
1896.....	49,619	110,257	2.22
1897.....	60,686	176,457	2.91
1898.....	87,600	286,000	3.26
1899.....	100,820	350,022	3.47
1900.....	157,134	649,140	4.13
1901.....	365,531	1,228,225	3.36
1902.....	502,043	1,519,185	3.03
1903.....	561,318	1,734,404	3.09
1904.....	554,083	2,032,048	3.66

COKE.

COKE.

The figures show a diminution in quantity of 7,235 tons. Taking the production by provinces, we find that Nova Scotia comes in for a rather heavy decrease of 95,818 tons. This is due to several causes, the main one being the decrease in the activity of the operations of the Dominion Iron and Steel Company, due to the strike of their workmen, during which, all work was practically suspended. A renewed activity is looked forward to for the next year.

TABLE 2.

COKE.

PRODUCTION OF COKE BY PROVINCES.

Calendar Year.	Nova Scotia.		British Columbia.		N. W. Territories.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
1897.....	41,532	90,950	19,154	85,507	.....	.....
1898.....	48,400	111,000	39,200	175,000	.....	.....
1899.. . . .	62,459	178,767	38,361	171,255	.....	.....
1900.....	61,767	223,395	95,367	425,745	.....	.....
1901.....	222,694	590,560	142,837	637,665	.....	.....
1902.....	363,330	899,930	138,713	619,255	.....	.....
1903... ..	371,745	888,094	189,573	846,310	.....	.....
1904.....	275,927	805,022	257,172	1,148,090	20,984	78,936

The coke production of the North-west Territories, which has been insignificant until this year, is now becoming quite important. The largest contributor is the International Coal and Coke Company of Coleman, who have a battery of 86 beehive coke ovens.

The West Canadian Colliery Company have 28 coke ovens in operation; these are of the Bernard type and the gas is used under the boilers. They are the only ovens of the by-product type worked in the West.

In British Columbia, we note a very large increase in the coke production, for which the Crows Nest Pass Coal Co is mainly responsible.

As remarked by the Provincial Mineralogist in his report for 1904, the consumption of coke by the British Columbia smelters has remained

SESSIONAL PAPER No. 26a

about the same as in 1903, but the export has increased chiefly owing COKE. to the opening up of markets in Montana through the completion of the branch of the Great Northern Railway. The ovens of the Crows Nest Pass Coal Company have not been run at their full capacity, so that the limit of the present market seems to have been reached, but there is every indication that it will be held during the coming year.

TABLE 3.

COKE.

EXPORTS OF COKE.

Calendar Year.	Tons.	Value.
		\$
1897	2,987	6,078
1898	3,774	8,394
1899	5,557	18,726
1900	41,529	131,278
1901	57,505	176,990
1902	62,568	180,920
1903	32,608	135,957
1904	102,463	345,031

TABLE 4.

COKE.

IMPORTS OF OVEN COKE.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1880	3,837	19,353	1893	41,821	156,277
1881	5,492	26,123	1894	42,864	176,996
1882	8,157	36,670	1895	43,235	149,434
1883	8,943	38,588	1896	61,612	203,826
1884	11,207	44,518	1897	83,330	267,540
1885	11,564	41,391	1898	135,060	347,040
1886	11,858	39,756	1899	141,284	362,826
1887	15,110	56,222	1900	187,878	506,839
1888	25,487	102,334	1901	308,786	680,138
1889	29,557	91,902	1902	267,142	842,815
1890	36,564	133,344	1903	256,723	1,222,756
1891	33,533	177,605	1904	221,050	765,123
1892	43,499	194,429	1904	Duty free.	

CHROMITE.

CHROMITE.

There was a considerable increase in the production of chromite in comparison with 1903. The returns for 1904 total up to more than \$67,000, which is the largest production yet recorded and is an increase of \$16,000 over 1903, and of more than \$54,000 over 1902.

This mineral is mined in the Eastern Townships of Quebec, with Coleraine township as centre, the points of shipment being Black Lake, D'Israeli and Broughton on the Quebec Central Railway. The ore is graded according to its contents of sesquioxide of chromium; the first class averaging 52%. As mined it contains about 40% and has to be concentrated.

The chief market is in the United States, where it is used for the manufacture of ferro-chrome and bi-chromates, while the low grades are employed as furnace lining. The exports to this country amount to about 80 per cent of the Canadian production. The balance is mainly used by the Electric Reduction Company of Buckingham, Canada, and small quantities are also shipped to France and Holland.

TABLE 1.

CHROMITE.

ANNUAL PRODUCTION.

Calendar Year.	Tons. (2,000 lbs.)	Average price per ton.	Value.
		\$ cts	\$
1886.....	* 60	15 75	945
1887.....	38	15 00	570
1888 to 1893.....	no output		
1894.....	1,000	20 00	20,000
1895.....	3,177	13 00	41,300
1896.....	2,342	11 53	27,004
1897.....	2,637	12 31	32,474
1898.....	*2,021	12 00	24,252
1899.....	2,010	10 86	21,842
1900.....	2,335	11 56	27,000
1901.....	1,274	13 14	16,744
1902.....	900	14 44	13,000
1903.....	3,509	14 57	51,129
1904.....	6,074	11 05	67,143

* Railway shipments.

TABLE 2.

CHROMITE

CHROMITE.

EXPORTS.

Calendar Year.	Tons.	Value.
1895	2,908	\$ 42,236
1896	2,466	31,411
1897	2,106	26,254
1898	1,683	20,783
1899	1,509	19,876
1900	368	8,259
1901	2,259	25,444
1902	740	7,535
1903	1,013	20,524
1904	3,338	60,336

GRAPHITE.

Returns from graphite producers show that this mineral was GRAPHITE. worked in Ontario, Quebec and New Brunswick, the relative importance of each province being in the order named.

The greater proportion of the Canadian graphite production comes from the Black Donald mine in the county of Renfrew, Ontario. .

Returns of output have been received from the Anglo-Canadian Graphite Company, Ltd., of Birmingham, England. This company acquired the mine and mills of the North American Graphite Company in Buckingham township.

The total Canadian production, however, only reached \$11,760, which is a considerable decrease compared with the previous year.

Table 1 shows the annual production since 1886, tables 2 and 3 give the exports and imports of graphite.

GRAPHITE.

TABLE 1.

GRAPHITE.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.....	500	\$4,000	1896.....	139	9,455
1887.....	300	2,400	1897.....	436	16,240
1888.....	150	1,200	1898.....		13,698
1889.....	242	3,160	1899.....	1,130	24,179
1890.....	175	5,200	1900.....	1,922	31,040
1891.....	260	1,560	1901.....	2,210	38,780
1892.....	167	3,763	1902.....	1,095	28,300
1893.....	nil.	nil.	1903.....	728	23,745
1894*.....	3	223	1904.....	452	11,760
1895.....	220	\$ 6,150			

* Exports.

TABLE 2.

GRAPHITE.

EXPORTS.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$ 3,586	1895.....	\$ 4,833
1887.....	3,017	1896.....	9,480
1888.....	1,080	1897.....	4,325
1889.....	538	1898.....	13,098
1890.....	1,529	1899.....	22,490
1891.....	72	1900.....	46,197
1892.....	3,952	1901.....	35,102
1893.....	38	1902.....	24,839
1894.....	223	1903.....	43,642
1904 { Crude.....		Cwt.	
{ Manufactures of.....		3,542	\$ 9,609
			6,958
			\$16,567

SESSIONAL PAPER No. 26a

TABLE 3.

GRAPHITE.

GRAPHITE.

IMPORTS OF RAW AND MANUFACTURED GRAPHITE.

Fiscal Year.	Plumbago.	Manufactures of plumbago.	
		Black-lead.	Other Manufactures.
1880.....	\$1,677	\$18,055	\$2,738
1881.....	2,479	26,544	1,202
1882.....	1,028	25,132	2,181
1883.....	3,147	21,151	2,141
1884.....	2,891	24,002	2,152
1885.....	3,729	24,487	2,805
1886.....	5,522	23,211	1,408
1887.....	4,020	25,766	2,830
1888.....	3,802	7,824	22,604
1889.....	3,546	11,852	21,789
1890.....	3,441	10,276	26,605
1891.....	7,217	8,292	26,201
1892.....	2,988	13,560	23,085
1893.....	3,293	16,595	23,051
1894.....	2,177	17,614	16,686
1895.....	2,586	13,922	21,988
1896.....	2,865	18,434	19,497
1897.....	1,406	17,863	20,674
1898.....	1,862	19,638	32,653
1899.....	4,979	21,334	36,490
1900.....	4,437	22,078	38,440
1901.....	2,357	25,646	49,890
1902.....	3,649	20,467	43,656
1903.....	2,870	22,559	47,117
1904	Duty.		
	Plumbago, not ground, &c. 10 p.c.	\$1,802	
	Black-lead..... 25 "		\$26,053
	Plumbago, ground and manufactures of N.E.S., 25 "		\$12,737
	Crucibles, clay or plumbago.....		28,773
Total, 1904.....		\$1,802	\$26,053
			\$41,510

GYPSUM.

For the last few years the production of gypsum has been very GYPSUM. steady, showing little fluctuation. In 1904 it amounted to 345,961 tons, representing a value of \$373,474. This is an increase in quantity but a decrease in the total value as compared with the previous year. The average value per ton for 1904 is \$1.08.

GYPSUM.

TABLE 1.

GYPSUM.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Average price per ton.	
1886.....	162,000	\$178,742	\$ 1.10	
1887.....	154,008	157,277	1.02	
1888.....	175,887	179,393	1.01	
1889.....	213,273	205,108	0.96	
1890.....	226,509	194,033	0.86	
1891.....	203,605	206,251	1.01	
1892.....	241,048	241,127	1.00	
1893.....	192,568	196,150	1.02	
1894.....	223,631	202,031	0.90	
1895.....	226,178	202,608	0.89	
1896.....	207,032	178,061	0.86	
1897.....	239,691	244,531	1.02	
1898.....	219,256	232,515	1.06	
1899.....	244,566	257,329	1.05	
1900.....	252,101	259,009	1.02	
1901.....	293,799	340,148	1.16	
1902.....	333,599	379,479	1.14	
1903.....	314,489	388,459	1.24	
1904 {	Crude gypsum.....	322,450	245,686	.76
	Ground gypsum.....	5,068	13,155	2.60
	Plaster of Paris and wall plaster.....	18,443	114,633	6.21
	Total.....	345,961	373,474	1.08

As usual the largest production, as to tonnage, is assigned to Nova-Scotia; this amounted to 218,580 tons, of a value of \$153,600. In quantity New Brunswick follows with a tonnage of 120,991, but as a greater proportion of this is calcined to plaster of Paris the value is greater than that of the Nova Scotia production; it is valued at \$187,524. Both of these provinces possess practically inexhaustible quantities of gypsum in the immense deposits of lower carboniferous age, and the supply is only limited by the demand. In Ontario small quantities of gypsum are obtained from the deposits along the Grand river, which belong to the Onondaga formation. In 1904 the tonnage was 2,390, valued at \$18,350. It is utilized for the most part in the manufacture of wall-plaster and other materials such as kalsomine, etc., hence its comparatively high value per ton. The same remark applies to Manitoba where gypsum has been quarried for a few years past.

SESSIONAL PAPER No. 26a

TABLE 2.

GYPSUM.

GYPSUM.

ANNUAL PRODUCTION BY PROVINCES.

CALENDAR YEAR.	NOVA SCOTIA.		NEW BRUNSWICK.		ONTARIO.		MANITOBA.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1887	116,346	116,346	29,102	29,216	8,560	11,715		
1888 . . .	124,818	120,429	44,369	48,764	6,700	10,200		
1889	165,025	142,850	40,866	49,130	7,382	13,128		
1890	181,285	154,972	39,024	30,986	6,200	8,075		
1891	161,934	153,955	36,011	33,996	5,660	18,300		
1892	197,019	170,021	39,709	65,707	4,320	5,399		
1893	152,754	144,111	36,916	41,846	2,898	10,193		
1894	168,300	147,644	52,962	48,200	2,369	6,187		
1895 . . .	156,809	133,929	66,949	63,839	2,420	4,840		
1896 . . .	136,590	111,251	61,137	59,024	3,305	7,786		
1897	155,572	121,754	82,658	118,116	1,461	4,661		
1898	132,086	106,610	86,083	121,704	1,087	4,201		
1899	126,754	102,055	116,792	151,296	1,020	3,978		
1900	138,712	108,828	112,294	145,850	1,095	4,331		
1901	170,160	136,947	121,595	189,709	1,504	5,692	600	7,800
1902	206,087	181,425	124,041	170,153	1,917	7,699	1,554	20,202
1903	189,427	173,881	119,182	172,080	2,720	21,988	3,160	20,510
1904	218,580	153,600	190,991	187,524	2,390	18,350	4,000	14,000

The greater part of the Canadian production of gypsum is exported to the United States in the crude state. In 1904 out of a production of 345,961 tons the exports of crude amounted to 298,211 tons, practically all from Nova Scotia and New Brunswick.

GYPSUM.

TABLE 3.
GYPSUM.
EXPORTS OF CRUDE GYPSUM.

Calendar Year.	NOVA SCOTIA.		NEW BRUNSWICK.		ONTARIO.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1874	67,830	68,164	.....	.....	.....	.....	67,830	68,164
1875	86,065	86,193	5,420	5,420	.....	.....	91,485	91,613
1876	87,720	87,590	4,925	6,616	120	180	92,765	94,386
1877	106,950	93,867	5,030	5,030	.....	.....	111,980	98,897
1878	88,631	76,695	16,335	16,435	489	675	105,455	93,865
1879	95,623	71,353	8,791	8,791	579	720	104,993	80,864
1880	125,685	111,833	10,375	10,987	875	1,240	136,935	124,060
1881	110,303	100,284	10,310	15,025	657	1,040	121,270	116,349
1882	133,426	121,070	15,597	24,581	1,249	1,946	150,272	147,597
1883	145,448	132,834	20,242	35,557	462	837	166,152	169,228
1884	107,653	100,446	21,800	32,751	638	1,254	130,141	134,451
1885	81,887	77,898	15,140	27,730	525	787	97,552	106,415
1886	118,985	114,116	23,498	40,559	350	538	142,833	155,213
1887	112,557	106,910	19,942	39,295	225	337	132,724	146,542
1888	124,818	120,429	20	50	670	910	125,508	121,389
1889	146,204	142,850	31,495	50,862	483	692	173,182	194,404
1890	145,452	139,707	30,034	52,291	205	256	175,691	192,254
1891	143,770	140,438	27,536	41,350	5	7	171,311	181,795
1892	162,372	157,463	27,488	43,623	.....	.....	189,860	201,086
1893	132,131	122,556	30,061	36,706	.....	.....	162,192	159,262
1894	119,569	111,586	40,843	46,538	.....	.....	160,412	158,124
1895	133,369	125,651	56,117	67,593	.....	.....	189,486	193,244
1896	116,331	109,054	64,946	77,535	.....	.....	181,277	186,589
1897	122,984	116,665	66,222	80,485	.....	.....	189,206	197,150
1898	99,215	93,474	70,399	81,433	.....	.....	169,614	174,907
1899	104,795	99,984	96,831	108,094	* ₁	12	201,626	208,090
1900	.....	.....	.....	.....	.....	.....	188,262	201,912
1901	.....	.....	.....	.....	.....	.....	236,247	231,594
1902	.....	.....	.....	.....	.....	.....	289,600	295,215
1903	.....	.....	.....	.....	.....	.....	287,496	311,580
1904	.....	.....	.....	.....	.....	.....	298,211	316,436

*Exported from British Columbia.

TABLE 4.
GYPSUM.
EXPORTS OF GROUND GYPSUM.

Calendar Year.	Nova Scotia.	New Brunswick.	Ontario.	Total.
	\$	\$	\$	\$
1890	.....	.....	.....	105
1891	.....	.....	.....	588
1892	.....	.....	.....	20,255
1893	.....	.....	.....	22,132
1894	2,124	17,930	.....	20,054
1895	3,364	18,827	42	22,233
1896	1,270	19,246	751	21,267
1897	1,655	5,024	84	6,763
1898	1,548	4,900	.....	6,448
1899	205	7,898	20	8,123
1900	.....	.....	.....	19,834
1901	.....	.....	.....	15,337
1902	.....	.....	.....	5,101
1903	.....	.....	.....	12,457
1904	.....	.....	.....	2,333

SESSIONAL PAPER No. 26a

TABLE 5.

GXPSUM.

GYPSUM.

IMPORTS OF GYPSUM, ETC.

Fiscal Year.	Crude Gypsum.		Ground Gypsum.		Plaster of Paris.	
	Tons.	Value.	Pounds.	Value.	Pounds.	Value.
1880.....	1,854	\$3,203	1,606,578	\$ 5,948	667,676	\$ 2,376
1881.....	1,731	3,442	1,544,714	4,676	574,006	2,864
1882.....	2,132	3,761	759,460	2,576	751,147	4,184
1883.....	1,384	3,001	1,017,905	2,579	1,448,650	7,867
1884.....		3,416	687,432	1,936	782,920	5,226
1885.....	1,353	2,354	461,400	1,177	689,521	4,809
1886.....	1,870	2,429	224,119	675	820,273	5,463
1887.....	1,557	2,492	13,266	73	594,146	4,342
1888.....	1,236	2,193	106,068	558	942,338	6,662
1889.....	1,360	2,472	74,390	372	1,173,996	8,513
1890.....	1,050	1,928	434,400	2,136	693,435	6,004
1891.....	376	640	36,500	215	1,035,605	8,412
1892.....	626	1,182	310,250	2,149	1,166,200	5,595
1893.....	496	1,014	140,830	442	552,130	3,143
1894.....		1,660	23,270	198	422,700	2,386
1895.....	603	960	20,700	88	259,200	1,619
1896.....	1,045	848	64,500	198	297,000	2,000
1897.....		772	45,000	123	969,900	4,489
1898.....	1,147	1,742	35,700	293	329,600	2,025
1899.....	325	692	33,900	338	496,300	3,120
1900.....	77	958	6,300	69	849,100	6,492
1901.....	286	1,125	65,400	1,097	502,200	3,978
1902.....	541	1,697	56,700	249	475,300	2,641
1903.....	1,076	2,187	68,700	228	630,800	3,599
1904.....	249	663	*106,800	559	625,100	2,885

*Equivalent to 356 barrels.

Crude gypsum, duty free. Ground gypsum, duty 15%. Plaster of Paris, duty 12½c. per 100 lbs.

MANGANESE.

MANGANESE. The Canadian manganese industry has not assumed any important proportions this year. As a whole the production is very irregular. The returns for 1904 show that the output did not exceed 66 tons, having a value of \$2,740, which gives an average of \$41.51 per ton. The total production was obtained from Nova Scotia.

TABLE 1.

MANGANESE.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Value per ton.
1886.....	1,789	\$41,499	\$23.20
1887.....	1,245	43,658	35.07
1888.....	1,801	47,944	26.62
1889.....	1,455	32,737	22.50
1890.....	1,328	32,550	24.51
1891.....	255	6,694	26.25
1892.....	115	10,250	89.13
1893.....	213	14,578	68.44
1894.....	74	4,180	56.49
1895.....	125	8,464	67.71
1896*.....	123½	3,975	32.19
1897*.....	15¼	1,166	76.46
1898.....	50	1,600	32.00
1899.....	1,581	20,004	12.65
1900.....	30	1,800	60.00
1901*.....	440	4,820	10.95
1902*.....	172	4,062	23.62
1903.....	91	2,775	30.49
1904.....	66	2,740	41.51

* Exports.

Tables 2 and 3 which follow, give figures relating to the Canadian manganese trade, table 2 gives figures of exports, and table 3, the figures of imports.

SESSIONAL PAPER No. 26a

TABLE 2.
MANGANESE.
EXPORT OF MANGANESE ORE.

MANGANESE.

CALENDAR YEAR.	NOVA SCOTIA.		NEW BRUNSWICK.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
1873.....			1,031	\$20,192	1,031	\$20,192
1874.....	6	\$ 12	776	16,961	782	16,973
1875.....		200	194	5,314	203	5,514
1876.....	21	723	391	7,316	412	8,039
1877.....	106	3,699	785	12,210	891	15,909
1878.....	106	4,889	520	5,971	626	10,860
1879.....	154	7,420	1,732	20,016	1,886	27,436
1880.....	79	3,090	2,100	31,707	2,179	34,797
1881.....	200	18,022	1,504	22,532	1,704	40,554
1882.....	123	11,520	771	14,227	894	25,747
1883.....	313	8,635	1,013	16,708	1,326	25,343
1884.....	134	11,054	469	9,035	603	20,089
1885.....	77	5,054	1,607	29,595	1,684	34,649
1886.....	(a) 441	30,854	1,377	27,484	(a) 1,818	58,338
1887.....	578	14,240	837	20,562	1,415	34,802
1888.....	87	5,759	1,094	16,073	1,181	21,832
1889.....	59	3,024	1,377	26,326	1,436	29,350
1890.....	177	2,583	1,729	34,248	1,906	36,831
1891.....	22	563	233	6,131	255	6,694
1892.....	84	6,180	59	2,025	143	8,205
1893.....	123	12,409	10	112	133	12,521
1894.....	11	720	45	2,400	56	3,120
1895.....	108	6,348	1 ¹ / ₁₀	3	108 ³ / ₁₀	6,351
1896.....	123 ¹ / ₂	3,975			123 ¹ / ₂	3,975
1897.....	15 ¹ / ₄	1,166			15 ¹ / ₄	1,166
1898.....	11	325			11	325
1899.....	67	2,328	3	82	70	2,410
1900.....					34	1,720
1901.....					440	4,820
1902.....					172	4,062
1903.....					135	1,889
1904.....					123	2,706

(a) 250 tons from Cornwallis should more correctly be classed under the heading of mineral pigments.

TABLE 3.
MANGANESE.
IMPORTS: OXIDE OF MANGANESE.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1884.....	3,989	\$ 258	1895.....	64,151	\$2,781
1885.....	36,778	1,794	1896.....	108,590	4,075
1886.....	44,967	1,753	1897.....	70,663	2,741
1887.....	59,655	2,933	1898.....	130,456	5,047
1888.....	65,014	3,022	1899.....	141,356	5,539
1889.....	52,241	2,182	1900.....	126,725	4,155
1890.....	67,452	3,192	1901.....	272,134	8,176
1891.....	92,087	3,743	1902.....	476,331	5,360
1892.....	76,097	3,530	1903.....	279,611	8,051
1893.....	94,116	3,696	1904 Duty free...	275,696	7,051
1894.....	101,863	4,522			

MICA.

MICA.

The figures of production of mica for the year 1904 are below those of the previous year as to the value. This is probably due to the greater use of micanite, which seems to be employed in place of the whole mica sheets in many cases. This micanite consists of thin leaves of mica cemented together and pressed. Small pieces of mica are used in the manufacture of large sheets of micanite, which of course makes a much cheaper product than large sheets of split mica.

Both provinces, Quebec and Ontario, contributed to the production, the former being responsible for about two-thirds of the total.

The greater part of the Canadian production is exported to the United States, as will be seen by glancing at the following tables which give the status of the mica industry for several years back.

TABLE 1.

MICA.

ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year.	Value.
1886.	\$ 29,008	1896.	\$60,000
1887.	29,816	1897.	76,000
1888.	30,207	1898.	118,375
1889.	28,718	1899.	163,000
1890.	68,074	1900.	166,000
1891.	71,510	1901.	160,000
1892.	104,745	1902.	135,904
1893.	75,719	1903.	177,857
1894.	45,581	1904.	160,777
1895.	65,000		

TABLE 2.

MICA.

EXPORTS.

Calendar Year.	Value.	Calendar Year.	Value.
1887.	\$ 3,480	1896.	\$47,756
1888.	23,563	1897.	69,101
1889.	30,597	1898.	110,507
1890.	22,468	1899.	153,002
1891.	37,590	1900.	146,750
1892.	86,562	1901.	152,553
1893.	70,081	1902.	(a) 391,812
1894.	38,971	1903.	196,020
1895.	48,525	1904.	198,482

(a) Probably includes some material manufactured from mica.

TABLE 3.

MICA.

MICA.

*IMPORTS OF MICA INTO THE UNITED STATES FROM CANADA, YEARS ENDING JUNE 30.

Fiscal Year.	Pounds.	Value.
1895.....	546,905	\$ 39,637
1896.....	570,750	53,719
1897.....	404,080	53,399
1898.....	465,779	53,854
1899.....	1,024,098	131,310
1900.....	1,097,067	136,981
1901.....	967,904	161,741
1902.....	854,167	184,287
1903.....	834,035	196,456
1904.....	573,035	137,191

* The Foreign Commerce and Navigation of the United States.

MINERAL WATERS.

As has been stated in our previous reports the following figures of MINERAL production of mineral waters must be taken more or less as approxi- WATERS. mations. At a number of places in Canada where mineral springs occur, the water is being used for drinking or bathing, and often bottled and sold more or less regularly. Moreover at several points hotels have been erected near springs the waters of which have curative properties. It is therefore very difficult to obtain returns which would enable us to present accurate statistics of the industry.

TABLE 1.

MINERAL WATERS.

ANNUAL PRODUCTION.

Calendar Year.	Gallons.	Value.	Calendar Year.	Gallons.	Value.
1888.....	124,850	\$ 11,456	1897.....	749,691	\$141,477
1889.....	424,600	37,360	1898.....	555,000	100,000
1890.....	561,165	66,031	1899.....		100,000
1891.....	427,485	54,268	1900.....		75,000
1892.....	640,380	75,348	1901.....		100,000
1893.....	725,096	108,347	1902.....		100,000
1894.....	767,460	110,040	1903.....		100,000
1895.....	739,382	126,048	1904.....		100,000
1896.....	706,372	111,736			

MINERAL
WATERS.TABLE 2.
MINERAL WATERS.
IMPORTS.

Fiscal Year.	*Value.
1880.....	\$41,797
1881.....	55,763
1882.....	57,953
1883.....	49,546
1884.....	48,613
1885.....	55,864
1886.....	47,006
1887.....	52,989
1888.....	54,891
1889.....	66,331
1890.....	71,521
1891.....	15,721
1892.....	17,913
1893.....	27,909
1894.....	28,130
1895.....	27,879
1896.....	32,674
1897.....	22,142
1898.....	33,314
1899.....	38,046
1900.....	30,343
1901.....	40,802
1902.....	91,871
1903.....	108,130
1904 { Mineral waters, natural, not in bottle..... D. ty free..	\$ 721
{ Mineral and aerated waters..... " 20 p.c.	136,583
Total.....	\$137,304

NATURAL GAS.

NATURAL
GAS.

The total value of the natural gas production in Canada in 1904 shows a very large increase over the previous years. From \$202,210 in 1903, it rose to \$328,376 in 1904 and Ontario is almost wholly responsible for the difference. The main field in Ontario is that of Welland county, and the largest producers are the Provincial Natural Gas and Fuel Company. This company has, this year, extended their distributing pipe line to the town of Niagara Falls, Ont., and to Chippawa, an adjoining village.

A new field has been opened in the county of Haldimand. The company operating in it intend to eventually supply natural gas to Hamilton.

SESSIONAL PAPER No. 26a

According to the report of the Ontario Bureau of Mines there were ^{NATURAL} 176 gas wells producing at the close of the year of which, 36 had been ^{GAS.} bored in 1904, the gas production being distributed through 231 miles of pipe.

Outside of Ontario the only returns of natural gas which were received were from Medicine Hat, in Assiniboia, where the town is operating a municipal natural gas plant.

The Canadian Pacific Railway are at present putting down some wells at the same place, but they are not producing yet.

TABLE 1.
NATURAL GAS.
ANNUAL PRODUCTION.

Calendar Year.	Value.
1892.....	\$ 150,000
1893.....	376,233
1894.....	313,754
1895.....	423,032
1896.....	276,301
1897.....	325,873
1898.....	322,123
1899.....	387,271
1900.....	417,094
1901.....	339,476
1902.....	195,992
1903.....	202,210
1904.....	328,376

MINERAL PIGMENTS.

Under this heading are included ochres and barytes only. Other ^{MINERAL} Canadian minerals are probably used in the manufacture of paints, but ^{PIGMENTS.} they are not recorded.

Mr. C. W. Willimott of this department has just concluded a long series of experiments on the Canadian minerals which can be used as mineral pigments, and the result will be published shortly in the form of a bulletin.

Ochres.—The output of ochre has been mainly derived from the deposits which are near Three Rivers, Champlain county, Quebec. The returns received show a production of 3,925 tons, valued at \$24,995. This is a decrease as compared with the output for 1903.

MINERAL
PIGMENTS.

We give below a list of the firms engaged in this production :—

Canada Paint Company, 572 William St., Montreal, Que.

Champlain Oxide Company, Three Rivers, Que.

Thos. H. Argall, Three Rivers, Que.

Ontario Mineral Paint Works, Campbellville, Ont.

TABLE 1.

MINERAL PIGMENTS.

ANNUAL PRODUCTION OF OCHRES.

Calendar Year.	Tons.	Value.
1886.....	350	\$ 2,350
1887.....	485	3,733
1888.....	397	7,900
1889.....	794	15,280
1890.....	275	5,125
1891.....	900	17,750
1892.....	390	5,800
1893.....	1,070	17,710
1894.....	611	8,690
1895.....	1,339	14,600
1896.....	2,362	16,045
1897.....	3,905	23,560
1898.....	2,226	17,450
1899.....	3,919	20,000
1900.....	1,966	15,398
1901.....	2,233	16,735
1902.....	4,955	30,495
1903.....	6,266	32,760
1904.....	3,925	24,995

SESSIONAL PAPER No. 26a

TABLE 2.
MINERAL PIGMENTS.
IMPORTS OF OCHRES.

MINERAL
PIGMENTS.

Fiscal Year.		Pounds.	Value.
1880.....		571,454	\$ 6,544
1881.....		677,115	8,972
1882.....		731,526	8,202
1883.....		898,376	10,375
1884.....		533,416	6,398
1885.....		1,119,177	12,782
1886.....		1,100,243	12,267
1887.....		1,460,128	17,067
1888.....		1,725,460	17,664
1889.....		1,342,783	12,994
1890.....		1,394,811	14,066
1891.....		1,528,696	20,550
1892.....		1,708,645	22,908
1893.....		1,968,645	23,134
1894.....		1,358,326	18,951
1895.....		793,258	12,048
1896.....		1,159,494	16,954
1897.....		1,504,044	18,504
1898.....		2,126,592	26,307
1899.....		2,444,698	31,092
1900.....		2,474,537	32,017
1901.....		2,092,067	27,267
1902.....		2,530,743	33,909
1903.....		3,215,346	42,243
1904 {	Ochres and ochrey earths and raw siennas.....	Duty.	
	Oxides, dry fillers, fire-proofs umbers and burnt siennas N.E.S.....	20 p. c.	1,163,939
		25 "	23,333
Total, 1904.....			2,767,580
			\$36,636

TABLE 3.
MINERAL PIGMENTS.

EXPORTS OF MINERAL PIGMENTS, IRON OXIDES, ETC.

Calendar Year.	Tons.	Value.
1897.....	512	\$7,706
1898.....	283	4,227
1899.....	308	5,408
1900.....	651	7,154
1901.....	401	8,233
1902.....	352	6,182
1903.....	676	12,770
1904.....	416	7,260

MINERAL
PIGMENTS.

Barytes.—The output of barytes amounted to 1,382 tons, valued at \$3,702. Nova Scotia and Quebec are the only provinces from which returns are made. In the first named province deposits are worked at Cape Rouge, Inverness county, while in Quebec, the main deposits are in Hull township, Wright county. The output is practically all used in the manufacture of paint.

TABLE 4.
MINERAL PIGMENTS.
ANNUAL PRODUCTION OF BARYTES.

Calendar Year.	Tons.	Value.
1885.....	300	\$ 1,500
1886.....	3,864	19,270
1887.....	400	2,400
1888.....	1,100	3,850
1889.....		
1890.....	1,842	7,543
1891.....		
1892.....	315	1,260
1893.....		
1894.....	1,081	2,830
1895.....		
1896.....	145	715
1897.....	571	3,060
1898.....	1,125	5,533
1899.....	720	4,402
1900.....	1,337	7,605
1901.....	653	3,842
1902.....	1,096	3,957
1903.....	1,163	3,931
1904.....	1,382	3,702

TABLE 5.
MINERAL PIGMENTS.
IMPORTS OF BARYTES.

Fiscal Year.	Cwt.	Value.
1880.....	2,230	\$ 1,525
1881.....	3,740	1,011
1882.....	497	303
1883.....		185
1884.....		229
1885.....	7	14
1886.....		62
1887.....	379	676
1888.....	236	214
1889.....	1,332	987
1890.....	1,322	978

SESSIONAL PAPER No. 26a

TABLE 6.

MINERAL
PIGMENTS.

MINERAL PIGMENTS.

MISCELLANEOUS IMPORTS, FISCAL YEAR, 1904.

—	Duty.	Quantity.	Value.
Paint, ground or mixed in, or with either japan, varnish, lacquers, liquid dryers, collodion, oil finish or oil varnish..... Lbs.	25 p. c.	51,379	\$ 3,623
Paints and colours, rough stuff and fillers, anti-corrosive and anti-fouling paints commonly used for ship hulls, N.E.S..... "	25 "	981,714	40,397
Paris green, dry..... "	10 "	279,770	36,524
Paints and colours ground in spirits, and all spirit varnishes and lacquers..... Galls.	\$1.12½ per gallon..	796	2,683
Putty..... Lbs.	20 p. c.	265,871	3,942
Total.....			87,169

PETROLEUM.

Ontario is as yet the only Province in Canada to be credited with **PETROLEUM.** an output of petroleum. The Canadian production is altogether derived from the oil pools of the south-western part of the Ontario peninsula, of which the Petrolia oil field is the most important.

In Manitoulin Island several holes were drilled during the year, and in the West a great deal of work has been done in south-west Alberta, but authentic reports of the operations are not yet available.

The details of production for the past four years are as follows:—

Crude Oil.	1901.	1902.	1903.	1904.
	Bbls.	Bbls.	Bbls.	Bbls.
Received at refineries	508,677	443,333	410,280	455,074
Direct sales for industrial purposes	113,715	87,291	76,357	48,400
Total sales of crude oil.....	622,392	530,624	486,637	503,474
" in gallons.....	21,783,720	18,571,840	17,032,295	17,621,590

PETROLEUM.

TABLE 1.

PETROLEUM.

CANADIAN OILS AND NAPHTHA INSPECTED AND CORRESPONDING QUANTITIES
OF CRUDE OIL.

Calendar Year.	Refined Oils Inspected.	Crude Equivalent Calculated.	Ratio of Crude to Refined.	Equivalent in Barrels of 35 Gallons	Average Price per Barrel of Crude.	Value of Crude Oil.
	Gallons.	Gallons.				
1881.....	6,457,270	12,914,540	100:50	368,987	.....	.....
1882.....	6,135,782	13,635,071	100:45	389,573	.....	.....
1883.....	7,447,648	16,550,328	100:45	472,866	.....	.....
1884.....	7,993,995	19,984,987	100:40	571,000	.....	.....
1885.....	8,225,882	20,564,705	100:40	587,563	.....	.....
1886.....	7,768,006	20,442,121	100:38	584,061	\$0 90	\$525,655
1887.....	9,492,588	24,980,494	100:38	713,728	0 78	556,708
1888.....	9,246,176	24,332,042	100:38	695,203	1 02½	713,695
1889.....	9,472,476	24,664,144	100:38	704,690	0 92½	653,600
1890.....	10,174,894	26,776,037	100:38	795,030	1 18	902,734
1891.....	10,065,463	26,435,430	100:38	755,298	1 33½	1,010,211
1892.....	10,370,707	27,291,334	100:38	779,753	1 26½	984,438
1893.....	10,618,804	27,944,221	100:38	798,406	1 09½	874,255
1894.....	11,027,082	29,018,637	100:38	829,104	1 00½	835,322
1895.....	10,674,232	25,414,838	100:42	726,138	1 49½	1,086,738
1896.....	10,684,284	25,438,771	100:42	726,822	1 59	1,155,647
1897.....	10,434,878	24,844,995	100:42	709,857	1 42½	1,011,546
1898.....	11,148,348	26,543,685	100:42	758,391	1 40	1,061,747
1899.....	11,927,981	28,399,955	100:42	808,570	1 48½	1,202,020
1900.....	13,428,422	24,867,449	100:54	710,498	1 62	1,151,007

TABLE 2.

PETROLEUM.

VALUE OF THE PRODUCTION OF CANADIAN OIL REFINERIES.

Calendar Year.	Value.	Calendar Year.	Value.
1887.....	\$1,288,109	1896.....	1,876,913
1888.....	1,401,459	1897.....	1,672,429
1889.....	1,414,184	1898.....	1,825,265
1890.....	1,638,420	1899.....	1,490,870
1891.....	1,534,509	1900.....	1,620,705
1892.....	1,782,365	1901.....	1,251,373
1893.....	1,675,784	1902.....	1,222,641
1894.....	1,567,134	1903.....	1,302,104
1895.....	1,806,237	1904.....	975,840

SESSIONAL PAPER No. 26a

TABLE 3.
PETROLEUM.

PETROLEUM.

TOTAL AMOUNT OF OIL INSPECTED, CANADIAN AND IMPORTED.

Fiscal Year	Canadian.	Imported.	Total.	Canadian.	Imported.
	Gallons.	Gallons.	Gallons.	Per cent.	Per cent.
1881.....	6,406,783	476,784	6,883,567	93.1	6.9
1882.....	5,910,747	1,351,412	7,262,159	81.4	18.6
1883.....	6,970,550	1,190,828	8,161,378	85.4	14.6
1884.....	7,656,001	1,142,575	8,798,586	87.0	13.0
1885.....	7,661,617	1,278,115	8,939,732	85.7	14.3
1886.....	8,149,472	1,327,616	9,477,088	86.0	14.0
1887.....	8,243,962	1,665,604	9,909,566	83.2	16.8
1888.....	9,545,895	1,821,342	11,367,237	84.0	16.0
1889.....	9,462,834	1,767,812	11,230,646	84.3	15.7
1890.....	10,121,210	2,020,742	12,141,952	83.4	16.6
1891.....	10,270,107	2,022,002	12,292,109	83.6	16.4
1892.....	10,238,426	2,423,445	12,667,871	80.8	19.2
1893.....	10,683,806	2,641,690	13,325,496	80.2	19.8
1894.....	10,824,270	5,633,222	16,457,492	65.8	34.2
1895.....	10,936,992	5,650,994	16,587,986	65.9	34.1
1896.....	10,533,951	5,807,991	16,341,942	64.5	35.5
1897.....	10,506,526	6,248,743	16,755,269	62.7	37.3
1898.....	10,796,847	6,880,734	17,677,581	61.1	38.9
1899.....	11,005,804	7,232,348	18,238,152	60.3	39.7
1900.....	13,014,713	*8,216,207	21,230,920	61.3	38.7
1901.....	12,674,977	*9,232,165	21,907,142	57.9	42.1
1902.....	10,494,874	*10,916,396	21,411,270	49.0	51.0
1903.....	8,615,892	*14,479,176	23,095,068	37.3	62.7
1904.....	7,292,113	*17,369,930	24,662,043	29.6	70.4

* Item (a) Table 5.

TABLE 4.
PETROLEUM.

EXPORTS OF CRUDE AND REFINED PETROLEUM.

Calendar Year.	Crude Oil.		Refined Oil.		Total.	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
1881.....					501	\$ 99
1882.....					1,119	286
1883.....					13,283	710
1884.....					1,098,090	30,168
1885.....					337,967	10,562
1886.....					241,716	9,855
1887.....					473,559	13,831
1888.....					196,602	74,542
1889.....					235,855	10,777
1890.....					420,492	18,154
1891.....	446,770	\$ 18,471	585	\$104	447,355	18,575
1892.....	310,387	12,945	1,146	100	311,533	13,045
1893.....	107,719	3,696	2,196	394	109,915	4,090
1894.....	53,985	2,773	5,297	513	59,282	3,286
1895.....	22,831	1,044	10,237	2,023	33,068	3,067
1896.....	601	101	7,489	999	8,090	1,100
1897.....			342	49	342	49
1898.....	96	4	12,735	3,001	12,831	3,005
1899.....			3,425	859	3,425	859
1900.....	40	2	8,559	2,394	8,599	2,396
1901.....	14,168	691	375	66	14,543	757
1902.....	400	40	626	146	1,026	186
1903.....	350	15	1,013	190	1,363	205
1904.....	4,207	213	2,126	470	6,333	683

PETROLEUM.

TABLE 5.

PETROLEUM.

IMPORTS OF PETROLEUM AND PRODUCTS OF.

Fiscal Year.		Gallons.	Value.
			\$
1880.		687,641	131,359
1881.		1,437,475	262,168
1882.		3,007,702	398,031
1883.		3,086,316	358,546
1884.		3,160,282	380,082
1885.		3,767,441	415,195
1886.		3,819,146	421,836
1887.		4,290,003	467,003
1888.		4,523,056	408,025
1889.		4,650,274	484,462
1890.		5,075,650	515,852
1891.		5,071,386	498,330
1892.		5,649,145	475,732
1893.		6,002,141	446,389
1894.		6,597,108	439,988
1895.		7,577,674	525,372
1896.		8,005,891	735,913
1897.		8,415,302	697,169
1898.		9,074,311	724,519
1899.		10,394,208	763,303
1900.		9,633,647	864,833
1901.		11,082,822	982,640
1902.		13,220,005	1,107,207
1903.		18,799,312	1,643,371
1904	Oils :—		
	Mineral :	Duty.	Gallons. Value.
	(a) Coal and kerosene, distilled, purified or refined, naphtha and petroleum, N.E.S.	2½c. p. gall.	17,369,930 1,526,989
	(b) Products of petroleum	2½c. "	855,383 100,609
	(c) Crude petroleum, fuel and gas oils (other than naphtha, benzine or gasoline) when imported by manufacturers (other than oil refiners) for use in their own factories, for fuel purposes or for the manufacture of gas	1½c. "	4,318,569 275,515
	(d) Illuminating oils composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon	20 p. c.	10,076 3,646
	(e) Lubricating oils composed wholly or in part of petroleum, costing less than 25 cents per gallon	2½c. p. gall.	1,967,157 245,864
Total			24,521,115 2,152,623

SESSIONAL PAPER No. 26a

TABLE 6.*

PETROLEUM.

PETROLEUM.

IMPORTS OF CRUDE AND MANUFACTURED OILS, OTHER THAN ILLUMINATING.

Fiscal Year.	Gallons.	Fiscal Year.	Gallons.
1881.....	960,691	1893 ...	1,481,749
1882.....	1,656,290	1894.....	1,860,829
1883.....	1,895,488	1895.....	1,106,993
1884.....	2,017,707	1896.....	1,079,965
1885.....	2,489,326	1897.....	802,286
1886.....	2,491,530	1898.....	1,047,026
1887.....	2,624,399	1899.....	1,017,278
1888.....	2,701,714	1900.....	1,406,700
1889.....	2,882,462	1901.....	1,838,966
1890.....	3,054,908	1902.....	2,296,353
1891.....	3,049,384	1903.....	4,316,010
1892.....	3,047,199	1904.....	7,141,109

* The figures for the years from 1881 to 1894, inclusive, represent the total imports of petroleum and products, less the quantity of imported illuminating oils, inspected by the Inland Revenue Department. For 1895 and subsequent years, the Table is composed of items (b), (c) and (e) of Table 5.

TABLE 7.

PETROLEUM.

IMPORTS OF PARAFFINE WAX.

Fiscal Year.	Pounds.	Value.
1883.....	43,716	\$ 5,166
1884.....	39,010	6,079
1885.....	59,967	8,123
1886.....	62,035	7,953
1887.....	61,132	6,796
1888.....	53,862	4,930
1889.....	63,229	5,250
1890.....	239,229	15,844
1891.....	753,854	50,275
1892.....	733,873	48,776
1893.....	452,916	38,935
1894.....	208,099	15,704
1895.....	163,817	11,579
1896.....	150,287	10,042
1897.....	138,703	7,945
1898.....	103,570	5,987
1899.....	92,242	4,025
1900.....	47,400	3,529
1901.....	118,844	9,639
1902.....	225,885	12,750
1903.....	592,642	28,674
1904... (Duty, 30 p. c.)	418,967	18,440

PETROLEUM.

TABLE 8.

PETROLEUM.

IMPORTS OF PARAFFINE WAX CANDLES.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	10,445	\$2,269	1893.....	8,351	\$1,735
1881.....	7,494	1,683	1894.....	10,818	1,685
1882.....	5,818	1,423	1895.....	19,448	2,541
1883.....	7,149	1,734	1896.....	25,787	4,072
1884.....	8,755	2,229	1897.....	25,114	2,929
1885.....	9,247	2,449	1898.....	60,802	4,427
1886.....	12,242	2,587	1899.....	62,331	5,856
1887.....	21,364	3,611	1900.....	27,663	3,671
1888.....	22,054	2,829	1901.....	44,562	3,588
1889.....	8,038	1,337	1902.....	51,120	5,752
1890.....	7,233	1,186	1903.....	83,377	9,025
1891.....	10,598	2,116	1904. (Duty, 30 p.c.).....	83,471	9,078
1892.....	9,259	1,952			

In August 1904, the Dominion parliament passed an Act providing for the payment of a bounty on crude petroleum produced in Canada. The full text of the Act and the regulations respecting it are reproduced below. This bounty stimulated the work of prospecting and boring in various parts of the Dominion, but, so far, no production has been reported from any new districts outside the Ontario area.

"An Act to provide for the payment of bounties on crude petroleum from Canadian wells.

(Assented to 10th August 1904.)

His Majesty, by and with the consent of the Senate and the House of Commons of Canada, enacts as follows:

1. This Act may be cited as The Petroleum Bounty Act, 1904.
2. The Governor in Council may authorize the payment out of the Consolidated Revenue Fund of a bounty of one and one-half cent per imperial gallon on all crude petroleum produced from wells in Canada on and after the eighth day of June, one thousand nine hundred and four, the said bounty to be paid to the producer of the petroleum.
3. The Governor in Council may authorize the payment out of the Consolidated Revenue Fund of a bounty of one and one-half cent per imperial gallon on all crude petroleum produced from wells in Canada and held in storage tanks or other storage receptacles on the eighth day of June, one thousand nine hundred and four, the said bounty to be paid to the actual owner of the petroleum on that day.
4. The Minister of Trade and Commerce shall be charged with the administration of this Act, and may, subject to the approval of the Governor in Council, make such regulations as he deems necessary respecting the payment of the said bounties.
5. This Act shall be deemed to have come into force on the eighth day of June, one thousand nine hundred and four."

SESSIONAL PAPER No. 26a

REGULATIONS.

PETROLEUM.

Regulations under the provisions of the Petroleum Bounty Act, 1904, intituled—

“An Act to provide for the payment of a Bounty on Crude Petroleum from Canadian Wells.”

1. The Minister of Trade and Commerce having been charged with the administration of the Act has, with the approval of the Governor in Council, made the following regulations respecting the payment of Bounties.

2. All producers of crude petroleum from wells in Canada who desire to avail themselves of the provisions of the Act above quoted, and to be paid a bounty, before making claim for such bounty, shall notify the Minister of their intentions to claim under the provision of the Act and shall for registration purposes, declare where or approximately where their wells are situated, the number thereof, their estimated monthly production, the place and names of the purchasers of the crude product, and in the case of a co-partnership the names of the individual partners, and in the case of an incorporated company, the names of the President, Secretary and Manager, as well as the name and address of the official authorized to make the claim.

3. The books of the claimants and those of the refineries, tanking companies, gas companies, fuel oil companies and sundry purchasers, shall be at all times open to the examination of the supervising officer, and of any officer of the Department of Trade and Commerce who may be detailed by the Minister for such purpose.

4. All claims shall be substantiated by the certificate of the receiving stations, tanking companies, refineries, gas companies, fuel oil companies, manufacturers of lubricating oils, or other purchasers as well as that of the supervising officer.

5. Samples must be taken at time of delivery of all crude oil sold by claimants and a record of same kept by the receivers and buyers.

6. The supervising officer may, at any time, make examination of samples or take samples at any of the receiving stations, fuel oil companies, tanking companies, refineries, gas companies, or at any purchasers or receivers of crude oil.

7. Claims for bounty may be made monthly when amounting to \$25 or more per month, and quarterly, when for a less sum.

8. Claims when made and certified as above, shall be forwarded by the supervising officer to the Department of Trade and Commerce for payment.

9. No claim will be recognized or paid unless the claimant has conformed to the requirements of regulation 2, and unless claim is made and substantiated as per regulation 4 and in form hereto attached.

10. *All claims to be made in duplicate.*

PHOSPHATE.

PHOSPHATE.

In 1904 the production of phosphate only reached 817 tons, valued at \$4,590. This is a large decrease as compared with 1903, but the phosphate output is necessarily very irregular, for the mineral is chiefly obtained as a by-product in the working of the mica mines of Labelle and Wright counties, Quebec. The larger proportion of the production is used in the manufacture of phosphorus, and the balance is made into fertilizer.

TABLE 1.

PHOSPHATE.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Average Value per ton.	Value.
1886.....	20,495	\$14. 85	\$304,338
1887.....	23,690	13. 50	319,815
1888.....	22,485	10. 77	242,285
1889.....	30,988	10. 21	316,662
1890.....	31,753	11. 37	361,045
1891.....	23,588	10. 24	241,603
1892.....	11,932	13. 20	157,424
1893.....	8,198	8. 65	70,942
1894.....	6,861	6. 00	41,166
1895.....	1,822	5. 25	9,565
1896.....	570	6. 00	3,420
1897.....	908	4. 39	3,984
1898.....	733	5. 00	3,665
1899.....	3,000	6. 00	18,000
1900.....	1,415	5. 02	7,105
1901.....	1,033	6. 07	6,280
1902.....	856	5. 79	4,953
1903.....	1,329	6. 18	8,214
1904.....	817	5. 62	4,590

TABLE 2.
PHOSPHATE.
EXPORTS.

PHOSPHATE.

Calendar Year.	Ontario.		Quebec.		Totals.	
	Tons.	*Value.	Tons.	*Value.	Tons.	*Value.
1878.....	824	\$12,278	9,919	\$195,831	10,743	\$208,109
1879.....	1,842	20,565	6,604	101,470	8,446	122,035
1880.....	1,387	14,422	11,673	175,664	13,060	190,086
1881.....	2,471	36,117	9,497	182,339	11,968	218,456
1882.....	568	6,338	16,585	302,019	17,153	308,357
1883.....	50	500	19,666	427,168	19,716	427,668
1884.....	763	8,890	20,946	415,350	21,709	424,240
1885.....	434	5,962	28,535	490,331	28,969	496,293
1886.....	644	5,816	19,796	337,191	20,460	343,007
1887.....	705	8,277	22,447	424,940	23,152	433,217
1888.....	2,643	30,247	16,133	268,362	18,776	298,609
1889.....	3,547	38,833	26,440	355,935	29,987	394,768
1890.....	1,866	21,329	26,591	478,040	28,457	499,369
1891.....	1,551	16,646	15,720	368,015	17,271	384,661
1892.....	1,501	12,544	9,981	141,221	11,482	153,765
1893.....	1,990	11,550	5,748	56,402	7,738	67,952
1894.....	1,980	10,560	3,470	29,610	5,450	40,170
1895.....			250	2,500	250	2,500
1896.....	1	5	299	2,990	300	2,995
1897.....	70	450	165	400	235	850
1898.....	21	240	702	8,000	723	8,240
1899.....	215	1,850	93	1,725	308	3,575
1900.....					Nil	Nil
1901.....					6	120
1902.....					70	1,880
1903.....					1	20
1904.....					191	5,348

*These values do not compare with those in Table 1 above; the spot value is adopted for the production whilst the exports are valued upon quite a different basis.

PYRITES.

PYRITES.

Ontario and Quebec are the only provinces from which returns of production of pyrites have been received. In Quebec the principal producers are the Eustis Mining Company, Eustis, Que., and the Nichols Chemical Company, Capelton. In Ontario the American Madoc Mining Company operates two deposits, while the British American Mining Company is also doing some work. The Ontario production is used in the manufacture of sulphuric acid, as is also the ore from the Quebec deposits, which however is also treated for the recovering of the copper contents.

TABLE 1.

PYRITES.

ANNUAL PRODUCTION.

Calendar Year.	Tons. 2,000 lbs.	Value.
		\$
1886.....	42,906	193,077
1887.....	38,043	171,194
1888.....	63,479	285,656
1889.....	72,225	307,292
1890.....	49,227	123,067
1891.....	67,731	203,193
1892.....	59,770	179,310
1893.....	58,542	175,626
1894.....	40,527	121,581
1895.....	34,198	102,594
1896.....	33,715	101,155
1897.....	38,910	116,730
1898.....	32,218	128,872
1899.....	27,687	110,748
1900.....	40,031	155,164
1901.....	35,261	130,544
1902.....	35,616	138,939
1903.....	33,982	127,713
1904.....	37,180	134,033

Table 1 shows the figures of production since 1886. The output for 1904 shows an increase over 1903, and according to all appearances the figures will continue to grow, as the Eustis Mining Company has just completed some installations which will enable them to greatly increase their production.

TABLE 2.

PYRITES.

PYRITES.

IMPORTS :—BRIMSTONE AND CRUDE SULPHUR.

Fiscal Year.	Pounds.	Value.
		\$
1880.....	1,775,489	27,401
1881.....	2,118,720	33,956
1882.....	2,375,821	40,329
1883.....	2,336,085	36,737
1884.....	2,195,735	37,463
1885.....	2,248,986	35,043
1886.....	2,922,043	43,651
1887.....	3,103,644	38,750
1888.....	2,048,812	25,318
1889.....	2,427,510	34,006
1890.....	4,440,799	44,276
1891.....	3,601,748	46,351
1892.....	4,769,759	67,095
1893.....	6,381,203	77,216
1894.....	5,845,463	61,558
1895.....	4,900,225	56,965
1896.....	6,934,190	63,973
1897.....	8,672,751	87,719
1898.....	38,026,798	373,786
1899.....	24,517,026	265,799
1900.....	21,128,656	215,433
1901.....	23,856,651	270,608
1902.....	24,640,735	325,307
1903.....	24,412,737	259,123
1904*.....	19,364,730	204,663

*Brimstone, crude, or in roll or flour, and sulphur in roll or flour. Duty free.

SALT

As in former years, the salt production was limited to the western part of the Ontario peninsula.

This industry is only limited by the demand, for immense quantities of salt exist in the underlying formations of that part of the country at depths varying from 975 ft. to 1,400 ft.

In 1904, the production slightly exceeded that of 1903, the total value having reached \$321,778.

As will be seen by glancing at the tables, the output of salt does not vary very much from year to year, but on the whole there is a steady increase which follows the growth of the market caused by the increase of population.

SALT.

The imports of salt are divided into two classes, which are given in tables 3 and 4 respectively. Table 3 gives the imports of salt paying a duty of 5 cts. to $7\frac{1}{2}$ cts. per 100 lbs. comprising salt not for use of fisheries, imported from other countries than the United Kingdom. Table 4 gives the more important item of salt imported free of duty from the United Kingdom, or imported for the use of the sea or gulf fisheries. This for the year 1904 amounted to \$338,082, of which over \$300,000 came from some part of the British Empire.

TABLE 1.

SALT.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.
1886.....	62,359	\$227,195
1887.....	60,173	166,394
1888.....	59,070	185,460
1889.....	32,832	129,547
1890.....	43,754	198,857
1891.....	45,021	161,179
1892.....	45,486	162,041
1893.....	62,324	195,926
1894.....	57,199	170,687
1895.....	52,376	160,455
1896.....	43,960	169,693
1897.....	51,348	225,730
1898.....	57,142	248,639
1899.....	59,339	254,390
1900.....	62,055	279,458
1901.....	59,428	262,328
1902.....	64,456	292,581
1903.....	62,452	297,517
1904.....	69,477	321,778

SESSIONAL PAPER No. 26a

TABLE 2.
SALT.
EXPORTS.

SALT.

Calendar Year.	Bushels.	Value.
1880.....	467,641	\$46,211
1881.....	343,208	44,627
1882.....	181,758	18,350
1883.....	199,733	19,492
1884.....	167,029	15,291
1885.....	246,794	18,756
1886.....	224,943	16,886
1887.....	154,045	11,526
1888.....	15,251	3,987
1889.....	8,557	2,390
1890.....	6,605	1,667
1891.....	5,290	1,277
1892.....	2,000	504
1893.....	4,940	1,267
1894.....	4,639	1,120
1895.....	4,865	959
1896.....	3,842	899
1897.....	5,383	1,193
1898.....	5,202	1,252
1899.....	11,205	2,773
1900.....	37,653	8,997
1901.....	39,224	6,510
1902.....	9,331	3,798
Pounds.		
1903.....	1,915,648	5,927
1904.....	1,006,036	4,186

TABLE 3.
SALT.
IMPORTS :—SALT PAYING DUTY.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	726,640	\$ 3,916	1892.....	18,648,191	\$ 65,963
1881.....	2,588,465	6,355	1893.....	21,377,339	79,838
1882.....	3,679,415	12,318	1894.....	15,867,825	53,336
1883.....	12,136,968	36,223	1895.....	8,498,404	29,881
1884.....	12,770,950	38,949	1896.....	7,665,257	24,550
1885.....	10,397,761	31,726	1897.....	11,911,766	33,470
1886.....	12,266,021	39,181	1898.....	11,068,785	32,792
1887.....	10,413,258	35,670	1899.....	11,781,453	32,839
1888.....	10,509,799	32,136	1900.....	11,028,337	30,180
1889.....	11,190,088	38,968	1901.....	11,625,688	34,087
1890.....	15,135,109	57,549	1902.....	13,892,849	39,605
1891.....	15,140,827	59,311	1903.....	14,554,693	41,785

			Duty.			
1904	{	Salt, coarse, N.E.S.....	5c. per 100 lbs.	10,094,505	\$23,594	
		Salt, fine, in bulk.....	5c. "	2,361,200	5,468	
		Salt, N.E.S., in bags, barrels or	7½c. "	17,323,478	44,764	
		other packages.....				
Total				29,779,183	73,826	

SALT.

TABLE 4.

SALT.

IMPORTS :—SALT NOT PAYING DUTY.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	212,714,747	\$400,167	1893.....	191,595,530	281,462
1881.....	231,640,610	488,278	1894.....	196,668,730	328,300
1882.....	166,183,962	311,489	1895.....	201,691,248	332,711
1883.....	246,747,113	386,144	1896.....	205,005,100	338,888
1884.....	225,390,121	321,243	1897.....	215,844,484	312,117
1885.....	171,571,209	255,719	1898.....	202,634,927	293,410
1886.....	180,205,949	255,359	1899.....	183,046,365	267,520
1887.....	203,042,332	285,455	1900.....	193,554,550	295,253
1888.....	184,166,986	220,975	1901.....	216,271,603	339,887
1889.....	180,847,800	253,009	1902.....	238,648,737	385,629
1890.....	158,490,075	252,291	1903.....	232,708,675	361,185
1891.....	195,491,410	321,239	1904*.....	198,634,047	338,082
1892.....	201,831,217	314,995			

*Salt imported from the United Kingdom, or any British possession, or imported for the use of the sea or gulf fisheries.

We give a list of the chief salt works in Ontario, most of which were in operation in 1904 :

The Canadian Salt Co., Ltd., E. G. Henderson, Vice-Pres., Windsor, Ont.

Saginaw Lumber and Salt Co., Sandwich, Ont.

Mooretown Salt Co., Ltd., Mooretown, Ont.

Carter and Kittermaster, Mooretown, Ont.

Sarnia Salt Co., Ltd., Sarnia, Ont.

Sarnia Bay Mills Co., Sarnia, Ont.

Cleveland Lumber and Salt Co., Sarnia, Ont.

Elarton Salt Works Co., Ltd., C. V. Morris, Warwick, Ont.

Parkhill Salt Co., A. K. Hodgins, Parkhill, Ont.

Exeter Salt Works Co., J. B. Carling, Sec'y., Exeter, Ont.

Hensall Salt Works, Geo. McEwan, Hensall, Ont.

Lake Huron and Manitoba Milling Co., Ltd., P. A. McGaw, Sec'y., Goderich, Ont.

R. and J. Ransford, Clinton, Ont.

Operating the following plants :—

Coleman Salt Works, Seaforth, Ont.

Stapleton Salt Works, Clinton, Ont.

North American Chemical Co., Goderich, Ont.

Goderich Salt Works, Goderich, Ont.

Brussels Salt Works, Brussels, Ont.

Clinton Salt Works, John McGarva, Clinton, Ont.

SESSIONAL PAPER No. 26a

Maitland Salt Works, John S. Platt, Goderich, Ont. SALT.
 The Grey, Young and Sparling Co. of Ont., Ltd., F. G. Sparling,
 Wingham, Ont.
 The Ontario People's Salt and Soda Co., Ltd., Jno. Tolmie, Sec'y.,
 Kincardine, Ont.
 Western Salt Co., Mooretown, Ont.
 Empire Salt Co., Sarnia, Ont.

STRUCTURAL MATERIALS.

These comprise building stone, granite, marbles, slate, flagstone, STRUCTURAL
 cements, lime, etc., as well as the manufactures of clay such as building MATERIALS.
 bricks, tiles, drain pipe, earthenware and coarse pottery.

It is impossible to obtain accurate figures of production. Many
 of these industries, such as quarrying, brick making, etc., are intermit-
 tent, and are scattered over such a large area as Canada that it is not
 possible to obtain anything like full returns, so that a large proportion
 has to be estimated. These remarks, however, do not apply to the
 manufacture of cement, for which it has been found possible to obtain
 as accurate records as of any other well established and continuous
 industry.

TABLE 1.

STRUCTURAL MATERIALS.

ANNUAL PRODUCTION OF BUILDING STONE.

Calendar Year.	Value.
1886.....	\$ 642,509
1887.....	552,267
1888.....	641,712
1889.....	913,691
1890.....	964,783
1891.....	708,736
1892.....	609,827
1893.....	1,100,000
1894.....	1,200,000
1895.....	1,095,000
1896.....	1,000,000
1897.....	1,000,000
1898.....	1,300,000
1899.....	1,500,000
1900.....	1,520,000
1901.....	1,650,000
1902.....	1,900,000
1903.....	1,975,000
1904.....	1,930,000

STRUCTURAL
MATERIALS.

TABLE 2.

STRUCTURAL MATERIALS.

EXPORTS OF STONE AND MARBLE, WROUGHT AND UNWROUGHT.

Calendar Year.	Wrought.	Unwrought.
1890.....	\$21,725	\$43,611
1891.....	13,398	46,162
1892.....	7,698	47,424
1893.....	9,102	12,532
1894.....	22,576	34,130
1895.....	8,587	51,616
1896.....	4,934	32,897
1897.....	9,415	42,034
1898.....	2,526	65,370
1899.....	5,092	101,931
1900.....	5,933	115,711
1901.....	5,917	157,739
1902.....	8,632	124,829
1903.....	7,684	46,295
1904.....	4,760	17,802

TABLE 3.

STRUCTURAL MATERIALS.

IMPORTS OF BUILDING STONE.

Calendar Year	Value.	Calendar Year.	Value.
1880.....	\$ 35,970	1892.....	\$95,550
1881.....	58,149	1893.....	56,510
1882.....	33,623	1894.....	52,908
1883.....	35,061	1895.....	44,282
1884.....	51,088	1896.....	54,130
1885.....	30,491	1897.....	38,714
1886.....	41,675	1898.....	28,495
1887.....	54,368	1899.....	48,040
1888.....	86,373	1900.....	64,533
1889.....	100,314	1901.....	46,078
1890.....	132,155	1902.....	09,074
1891.....	170,890	1903.....	87,866
1904 { Flagstones, granite and rough freestone, sandstone, and all building stone, not hammered or chiselled. Duty 15 p.c....		\$59,864	
		Granite and freestones, dressed; all other building stone dressed, except marble. Duty 20 p.c.....	
		33,914	
		\$93,778	

TABLE 4.
STRUCTURAL MATERIALS.

STRUCTURAL
MATERIALS.

IMPORTS OF MANUFACTURES OF STONE OR GRANITE, N.E.S.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.	\$29,408	1892.	\$39,479
1881.	36,877	1893.	49,323
1882.	37,267	1894.	49,510
1883.	45,636	1895.	51,050
1884.	45,290	1896.	51,499
1885.	39,867	1897.	34,026
1886.	41,984	1898.	41,240
1887.	41,829	1899.	60,148
1888.	47,487	1900.	57,039
1889.	61,341	1901.	66,639
1890.	84,396	1902.	72,397
1891.	61,051	1903.	78,629
1904 {		Granite—Sawn only. Duty, 20 p.c.	\$ 7,930
		" Finished and polished " 35 p.c.	75,428
		" Manufactures of N.O.P " 35 p.c.	38,336
		Paving blocks. " 20 p.c.	19,471
		Manufactures of stone, N.O.P " 30 p.c.	19,471
			\$141,165

TABLE 5.

STRUCTURAL MATERIALS.

ANNUAL PRODUCTION OF MARBLE.

Calendar Year.	Tons.	Value.
1886.	501	\$9,900
1887.	242	6,224
1888.	191	3,100
1889.	83	980
1890.	780	10,776
1891.	240	1,752
1892.	340	3,600
1893.	590	5,100
1894.	Nil.	Nil.
1895.	200	2,000
1896.	224	2,405
1897 to 1904 inclusive.	Nil.	Nil.

STRUCTURAL
MATERIALS.TABLE 6.
STRUCTURAL MATERIALS.
IMPORTS OF MARBLE.

Fiscal Year.		Value.
1880.....		\$ 63,015
1881.....		85,977
1882.....		109,505
1883.....		128,520
1884.....		108,771
1885.....		102,835
1886.....		117,752
1887.....		104,250
1888.....		94,681
1889.....		118,421
1890.....		99,353
1891.....		107,661
1892.....		106,268
1893.....		96,177
1894.....		94,657
1895.....		83,422
1896.....		90,065
1897.....		77,150
1898.....		95,894
1899.....		101,879
1900.....		94,017
1901.....		96,159
1902.....		130,424
1903.....		153,481
1904 {	Marble and manufactures of :—	Duty.
	Marble sawn only	20 %
	Finished and polished	35 %
	Rough, not hammered or chiselled	15 %
	Manufactures of, N.O.P.	35 %
Total, marble and manufactures of.		\$117,186
		81,073
		11,922
		52,403
		\$181,511

TABLE 7.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF GRANITE.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.....	6,062	\$63,309	1896.....	18,717	106,709
1887.....	21,217	142,506	1897.....	10,345	61,934
1888.....	21,352	147,305	1898.....	23,897	81,073
1889.....	10,197	79,624	1899.....	13,418	90,542
1890.....	13,307	65,985	1900.....		80,000
1891.....	13,637	70,056	1901.....		155,000
1892.....	24,302	89,326	1902.....		210,000
1893.....	22,521	94,393	1903.....		200,000
1894.....	16,392	109,936	1904.....		150,000
1895.....	19,238	84,838			

TABLE 8.

STRUCTURAL
MATERIALS.

STRUCTURAL MATERIALS.

ANNUAL PRODUCTION OF SLATE.

Calendar Year.	Tons.	Value.
1886.....	5,345	\$64,675
1887.....	7,357	89,000
1888.....	5,314	90,689
1889.....	6,935	119,160
1890.....	6,368	100,250
1891.....	5,000	65,000
1892.....	5,180	69,070
1893.....	7,112	90,825
1894.....		75,550
1895.....		58,900
1896.....		53,370
1897.....		42,800
1898.....		40,791
1899.....		33,406
1900.....		12,100
1901.....	715	9,980
1902.....		19,200
1903.....		22,040
1904.....		23,247

TABLE 9.

STRUCTURAL MATERIALS.

EXPORTS OF SLATE.

Calendar Year.	Tons.	Value.
1884.....	539	\$6,845
1885.....	346	5,274
1886.....	34	495
1887.....	27	373
1888.....	22	475
1889.....	26	3,303
1890.....	12	153
1891.....	15	195
1892.....	87	2,038
1893.....	178	3,168
1894.....	187	3,610
1895.....	36	574
1896.....	301	8,913
1897.....	Nil.	Nil.
1898.....	Nil.	Nil.
1899.....	Nil.	Nil.
1900.....	Nil.	Nil.
1901.....	16,750	10,000
1902.....		
1903.....		
1904.....		

STRUCTURAL
MATERIALS.TABLE 10.
STRUCTURAL MATERIALS.
IMPORTS OF SLATE.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$21,431	1892.....	\$50,441
1881.....	22,184	1893.....	51,179
1882.....	24,543	1894.....	29,267
1883.....	24,968	1895.....	19,471
1884.....	28,816	1896.....	24,176
1885.....	28,169	1897.....	21,615
1886.....	27,852	1898.....	24,907
1887.....	27,845	1899.....	33,100
1888.....	23,151	1900.....	53,707
1889.....	41,370	1901.....	72,187
1890.....	22,871	1902.....	72,601
1891.....	46,104	1903.....	84,487
		Duty.	
1904 {	Slate and manufactures of—		
	Mantels	30 %	
	Roofing slate.....	25 % not	
		over 75c	
		per square	\$38,245
	School writing slates.....	25 %	28,091
	Slate pencils.....	25 %	2,357
	Slate of all kinds and manufactures of, N.E.S..	30 %	17,364
	Total.....		\$86,057

TABLE 11.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF FLAGSTONE.

Calendar Year.	Quantity, Sq. ft.	Value.
1886.....	70,000	\$ 7,875
1887.....	116,000	11,600
1888.....	64,800	6,580
1889.....	14,000	1,400
1890.....	17,865	1,643
1891.....	27,300	2,721
1892.....	13,700	1,869
1893.....	40,500	3,487
1894.....	152,700	5,298
1895.....	80,005	6,687
1896.....		6,710
1897.....		7,190
1898.....		4,250
1899.....		7,600
1900.....		5,250
1901.....		4,575
1902.....	87,300	7,760
1903.....	79,200	6,688
1904.....	75,600	6,720

TABLE 12.
STRUCTURAL MATERIALS.
IMPORTS OF FLAGSTONE.

STRUCTURAL
MATERIALS.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1881.....	23	\$ 241	1893.....	884	8,500
1882.....	90	848	1894.....	218	2,429
1883.....	10	99	1895.....	15	84
1884.....	137	1,158	1896.....	Nil.	Nil.
1885.....	205	1,756	1897.....	13	227
1886.....	1,602	9,443	1898.....	587	1,540
1887.....	1,316	10,966	1899.....	Nil.	Nil.
1888.....	2,642	21,077	1900.....	9	63
1889.....	1,669	15,451	1901.....	14	116
1890.....	5,665	48,995	1902.....	232	1,231
1891.....	3,770	36,348	1903.....	Nil.	Nil.
1892.....	1,571	15,048	*1904.....	Nil.	Nil.

* Flagstones dressed. Duty, 20 %. (See table 3).

Cement.—There is a notable increase this year in the Canadian production of cement, and also in the imports, which added together give the largest consumption yet attained in Canada. The actual sales and shipments in 1904 of cement manufactured in Canada reached 967,172 barrels, valued at \$1,338,239, an increase over 1903, of 247,179 barrels, representing an increase in value of \$112,992. These figures include both natural and Portland cement. The production of the natural rock cement is, however, fast decreasing, having been this year only 56,814 barrels, whereas, five years ago, it was nearly 150,000 barrels.

TABLE 13.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF CEMENT.

Calendar Year.	Natural Rock Cement.		Portland Cement.		Total.	
	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.
		\$		\$		
1887.....					69,843	\$ 81,909
1888.....					50,668	35,593
1889.....					90,474	69,790
1890.....					102,216	92,405
1891.....					93,473	108,561
1892.....					117,408	147,663
1893.....					158,597	194,015
1894.....					108,142	114,637
1895.....					128,294	173,675
1896.....					149,090	201,651
1897.....	85,450	65,893	119,763	209,380	205,213	275,273
1898.....	87,125	73,412	163,084	324,168	250,209	397,580
1899.....	147,367	119,308	255,366	513,983	396,753	633,291
1900.....	125,428	99,994	292,124	562,916	417,552	662,910
1901.....	133,328	94,415	317,066	565,615	450,394	660,030
1902.....	127,931	98,932	594,594	1,028,618	722,525	1,127,550
1903.....	92,252	74,655	627,741	1,150,592	719,993	1,225,247
1904.....	56,814	50,247	910,358	1,287,992	967,172	1,338,239

STRUCTURAL
MATERIALS.

The imports of Portland cement for this year were 2,476,388 cwt. representing 619,097 barrels of 400 lbs. This added to the production, gives a total consumption of 1,586,269 barrels.

Following is an estimate of the consumption of cement in Canada for the past eight years.

	Canadian	Imported	Total
	barrels.	barrels.	barrels.
1897.....	119,763	210,871	330,634
1898.....	163,084	268,264	431,348
1899.....	225,366	325,106	550,472
1900.....	292,124	325,340	617,464
1901.....	317,066	403,108	720,174
1902.....	594,594	492,904	1,087,498
1903.....	627,741	579,213	1,206,954
1904.....	967,172	619,097	1,586,269

TABLE 14.

STRUCTURAL MATERIALS.

EXPORTS OF CEMENT.

Calendar Year.	Value.
1891.....	\$ 2,881
1892.....	938
1893.....	1,172
1894.....	482
1895.....	937
1896.....	1,328
1897.....	644
1898.....	2,117
1899.....	2,733
1900.....	3,296
1901.....	1,514
1902.....	2,267
1903.....	2,851
1904.....	5,494

SESSIONAL PAPER No. 26a

TABLE 15.
STRUCTURAL MATERIALS.
IMPORTS OF CEMENT IN BULK OR BAGS.

STRUCTURAL
MATERIALS.

Fiscal Year.	Bushels.	Value.	Fiscal Year.	Bushels.	Value.
1880.....	65	\$ 28	1893.....	12,534	\$ 2,909
1881.....	579	298	1894.....	9,027	2,618
1882.....	386	86	1895.....		2,112
1883.....	1,759	548	1896.....		3,672
1884.....	4,626	1,236	1897.....		4,318
1885.....	4,598	1,315	1898.....		3,263
1886.....	6,808	1,851	1899.....		8,929
1887.....	5,421	1,419	1900.....		10,452
1888.....	23,919	5,787	1901.....		4,890
1889.....	32,818	10,668	1902.....		12,234
1890.....	21,055	5,443	1903.....		16,281
1891.....	11,281	2,890	1904*		14,305
1892.....	14,351	3,394			

*Cement, N.E.S., and manufactures of cement, Duty 20 per cent.

TABLE 16.
STRUCTURAL MATERIALS.
IMPORTS OF HYDRAULIC CEMENT.

Fiscal Year.	Barrels.	Value.
1880.....	10,034	\$ 10,306
1881.....	7,812	7,821
1882.....	11,945	13,410
1883.....	11,659	13,755
1884.....	8,606	9,514
1885.....	5,613	5,396
1886.....	6,164	6,028
1887.....	6,160	8,784
1888.....	5,636	7,522
1889.....	5,835	7,467
1890.....	5,440	9,048
1891.....	3,515	6,152
1892.....	2,214	2,782
1893.....	4,896	8,060
1894.....	1,054	985
1895.....	5,333	7,001
1896.....	5,688	8,948
1897.....	2,494	3,937
	Cwt.	
1898.....	16,033	7,097
1899.....	1,678	694
1900.....	10,418	4,711
1901.....	17,784	6,865
1902.....	29,585	17,755
1903.....	13,690	6,333
1904 (Cement hydraulic or waterlime)*.....	12,088	5,391

*Duty, 12½c. per 100 lbs.

STRUCTURAL
MATERIALS.TABLE 17.
STRUCTURAL MATERIALS.
IMPORTS OF PORTLAND CEMENT.

Fiscal Year.	Barrels.	Value.	Fiscal Year.	Barrels.	Value.
1880.....		\$ 55,774	1893.....	229,492	\$316,179
1881.....		45,646	1894.....	224,150	280,841
1882.....		66,579	1895.....	196,281	242,813
1883.....		102,537	1896.....	204,407	242,409
1884.....		102,857	1897.....	210,871	252,587
1885.....		111,521		Cwt.	
1886.....		120,398	1898.....	1,073,058	355,264
1887.....	102,750	148,054	1899.....	1,300,424	467,994
1888.....	122,402	177,158	1900.....	1,301,361	498,607
1889.....	122,273	179,406	1901.....	1,612,432	654,595
1890.....	192,322	313,572	1902.....	1,971,616	833,657
1891.....	183,728	304,648	1903.....	2,316,853	868,131
1892.....	187,233	281,553	1904 (Portland)*.	2,476,388	995,017

* Duty, 12½c. per 100 lbs.

Natural rock cement was made by four firms in Ontario and one in Manitoba, and the total sales during the year amounted to 56,814 barrels, valued at \$50,247. This is a decrease of 35,438 barrels in quantity and \$24,408 in value.

The firms engaged in the manufacture of natural rock cement in 1904, were the following:

Hamilton Cement Works..... Hamilton, Ont.
 Queenston Cement Works..... Hamilton, Ont.
 Battle's Thorold Cement Works.. Thorold, Ont.
 The Toronto Lime Company..... Toronto, Ont.
 The Manitoba Union Mining Com-
 pany Ltd..... Winnipeg, Man.

Portland Cement.—That the use of Portland cement is increasing rapidly, is shown by the returns received at this office. The sales for the year amounted to 910,358 barrels representing a value of \$1,287,992, while the stock on hand at the end of the year was 112,051 barrels. The total quantity of Portland cement manufactured during the year was 908,990 barrels and the stock on hand at the beginning of the year was 113,419 barrels.

It is only since the last three years that the quantity of cement manufactured in Canada, exceeded that of the imported product. In 1897, the imported cement represented more than 63 per cent of the Canadian consumption, while in 1904 the proportion had fallen to

SESSIONAL PAPER No. 26a

38 per cent. Foreign cement is mainly imported from the United States, Belgium, Great Britain and Germany, the relative quantity from each country being in the order given, with small amounts from other countries.

STRUCTURAL
MATERIALS.

We give below a list of the companies engaged in the manufacture of Portland cement during 1904 :—

Crescent Cement Works, Longue Point, Que.
 Canadian Portland Cement Co., Deseronto, Ont.
 Lakefield Portland Cement Co., Lakefield, Ont.
 Imperial Cement Co., Ltd., Owen Sound, Ont.
 Owen Sound Portland Cement Co., Ltd., Owen Sound, Ont.
 Grey and Bruce Portland Cement Co., Ltd., Owen Sound, Ont.
 Sun Portland Cement Co., Ltd., Owen Sound, Ont.
 Hanover Portland Cement Co., Ltd., Hanover, Ont.
 National Portland Cement Co., Toronto and Durham, Ont.
 Ontario Portland Cement Co., Brantford, Ont.

Companies with works completed or in process of erection, and companies proposing to erect plants :—

International Portland Cement Co., Toronto, Ont. and Hull, Que.
 Colonial Portland Cement Co., Wiarton, Ont.
 Belleville Portland Cement Co., Belleville, Ontario
 Raven Lake Portland Cement Co., Toronto and Victoria Rd., Ont.
 Superior Portland Cement Co., Orangeville, Ont.
 St Mary's Portland Cement Co., Orangeville, Ont.
 Standard Portland Cement Co., Toronto, Ont.
 Royal Cement Co., Montreal, Que.
 Manitoba Portland Cement Co., Winnipeg, Man.
 Vancouver Portland Cement Co., Vancouver, B.C.
 Sydney Cement Co., Sydney, C.B.

Statistics of the other items classed under the heading of structural material are given in the following tables.

STRUCTURAL
MATERIALS.TABLE 18.
STRUCTURAL MATERIALS.
PRODUCTION OF ROOFING CEMENT.

Calendar Year.	Tons.	Value.
1890.....	1,171	\$ 6,502
1891.....	1,020	4,810
1892.....	800	12,000
1893.....	951	5,441
1894.....	815	3,978
1895.....		3,153
1896.....	86	430
1897 to 1904 inclusive.....	Nil.	Nil.

TABLE 19.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF LIME.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$283,755	1896 estimated.....	650,000
1887.....	394,859	1897 ".....	650,000
1888.....	339,951	1898 ".....	650,000
1889.....	362,848	1899 ".....	800,000
1890.....	412,308	1900 ".....	800,000
1891.....	251,215	1901 ".....	830,000
1892.....	411,270	1902 ".....	892,000
1893 estimated.....	900,000	1903 ".....	900,000
1894 ".....	900,000	1904 ".....	780,000
1895.....	700,060		

TABLE 20.
STRUCTURAL MATERIALS.
EXPORTS OF LIME.

Calendar Year.	Value.
1891.....	\$119,853
1892.....	121,535
1893.....	86,623
1894.....	83,670
1895.....	71,397
1896.....	70,820
1897.....	53,177
1898.....	49,594
1899.....	73,565
1900.....	80,852
1901.....	99,194
1902.....	116,009
1903.....	131,412
1904.....	73,838

SESSIONAL PAPER No. 26a

TABLE 21.
STRUCTURAL MATERIALS.
IMPORTS OF LIME.

STRUCTURAL
MATERIALS.

Fiscal Year.	Barrels.	Value.
1880.....	6,100	\$ 6,013
1881.....	5,796	4,177
1882.....	5,064	5,365
1883.....	7,623	9,224
1884.....	10,804	11,200
1885.....	12,072	11,503
1886.....	11,021	9,347
1887.....	10,835	8,524
1888.....	10,142	7,537
1889.....	13,079	9,363
1890.....	8,149	5,360
1891.....	6,259	4,273
1892.....	6,132	4,241
1893.....	6,879	4,917
1894.....	6,766	4,907
1895.....	12,008	5,743
1896.....	10,239	7,331
1897.....	16,108	10,529
1898.....	12,850	9,002
1899.....	15,720	11,124
1900.....	12,865	11,211
1901.....	19,657	14,534
1902.....	24,602	17,584
1903.....	31,108	22,470
1904..... Duty, 20 p.c.	54,359	39,639

TABLE 22.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF BUILDING BRICKS.

Calendar Year.	Value.
1886.....	\$ 873,600
1887.....	986,689
1888.....	1,036,746
1889.....	1,273,884
1890.....	1,266,982
1891.....	1,061,536
1892.....	1,251,934
1893.....	1,800,000
1894.....	1,800,000
1895.....	1,670,000
1896.....	1,600,000
1897.....	1,600,000
1898.....	1,900,000
1899.....	2,195,000
1900.....	2,275,000
1901.....	2,400,000
1902.....	2,593,000
1903.....	2,832,000
1904.....	2,983,000

STRUCTURAL
MATERIALS.TABLE 23.
STRUCTURAL MATERIALS.
EXPORTS OF BRICKS.

Calendar Year.	M.	Value.
1891.....	246	\$ 1,163
1892.....	1,963	12,192
1893.....	6,073	44,110
1894.....	1,095	7,405
1895.....	1,655	8,665
1896.....	983	5,678
1897.....	573	2,679
1898.....	65	442
1899.....	172	1,351
1900.....	546	4,528
1901.....	646	5,189
1902.....	2,110	12,786
1903.....	891	5,699
1904.....	696	5,357

TABLE 24.
STRUCTURAL MATERIALS.
IMPORTS OF BUILDING BRICK.

Fiscal Year.	Value.
1880.....	\$ 2,067
1881.....	4,251
1882.....	24,572
1883.....	14,234
1884.....	20,258
1885.....	14,632
1886.....	5,929
1887.....	2,440
1888.....	20,720
1889.....	24,585
1890.....	12,500
1891.....	9,744
1892.....	5,075
1893.....	14,108
1894.....	18,320
1895.....	4,705
1896.....	23,189
1897.....	10,336
1898.....	6,652
1899.....	21,306
1900.....	19,305
1901.....	20,677
1902.....	33,802
1903.....	28,493
1904.....Duty, 20 p.c.	117,468

SESSIONAL PAPER No. 26a

TABLE 25.

STRUCTURAL
MATERIALS.

STRUCTURAL MATERIALS.

PRODUCTION OF TERRA COTTA, &c.

Calendar Year.	Value.	Calendar Year.	Value.
1888.....	\$ 49,800	1897.....	155,595
1889.....	Not available.	1898.....	167,902
1890.....	90,000	1899.....	220,258
1891.....	113,103	1900.....	259,450
1892.....	97,239	1901.....	278,671
1893.....	55,704	1902.....	276,241
1894.....	65,600	1903.....	405,796
1895.....	195,123	1904.....	(a)
1896.....	83,855		

(a) Included in Table 22.

TABLE 26.

STRUCTURAL MATERIALS.

PRODUCTION OF SEWER PIPES, &c.

Calendar Year.	Value.
1888.....	\$266,320
1889.....	Not available.
1890.....	348,000
1891.....	227,300
1892.....	367,660
1893.....	350,000
1894.....	250,325
1895.....	257,045
1896.....	153,875
1897.....	164,250
1898.....	181,717
1899.....	161,546
1900.....	231,525
1901.....	248,115
1902.....	301,965
1903.....	317,970
1904.....	440,894

STRUCTURAL
MATERIALS.

TABLE 27.
STRUCTURAL MATERIALS.
IMPORTS OF DRAIN TILES AND SEWER PIPES.

Fiscal Year.		Value.
1880.....		\$ 33,796
1881.....		37,368
1882.....		70,065
1883.....		70,699
1884.....		71,755
1885.....		69,589
1886.....		57,953
1887.....		71,203
1888.....		101,257
1889.....		83,215
1890.....		77,434
1891.....		87,195
1892.....		59,537
1893.....		39,001
1894.....		24,625
1895.....		21,053
1896.....		19,296
1897.....		34,286
1898.....		29,611
1899.....		33,898
1900.....		39,149
1901.....		56,083
1902.....		55,530
1903.....		57,352
1904 { Drain tile, not glazed..... Drain pipes, sewer pipes, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed.....		Duty.
		20 %
		35 %
		Total.....
		\$ 1,637
		53,958
		\$55,595

TABLE 28,
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF POTTERY.

Calendar Year.	Value.	Calendar Year.	Value.
1888.....	\$ 27,750	1897.....	129,629
1889.....	Not available	1898.....	214,675
1890.....	195,242	1899.....	185,000
1891.....	258,844	1900.....	200,000
1892.....	265,811	1901.....	200,000
1893.....	213,186	1902.....	200,000
1894.....	162,144	1903.....	200,000
1895.....	151,588	1904.....	140,000
1896.....	163,427		

SESSIONAL PAPER No. 26a

TABLE 29.

STRUCTURAL MATERIALS.

STRUCTURAL
MATERIALS.

IMPORTS OF EARTHENWARE.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$322,333	1892.....	\$748,810
1881.....	439,029	1893.....	709,737
1882.....	646,734	1894.....	695,514
1883.....	657,886	1895.....	547,935
1884.....	544,586	1896.....	575,493
1885.....	511,853	1897.....	595,822
1886.....	599,269	1898.....	675,874
1887.....	750,691	1899.....	916,727
1888.....	697,082	1900.....	959,526
1889.....	697,949	1901.....	1,114,677
1890.....	695,206	1902.....	1,275,093
1891.....	634,907	1903.....	1,406,610

1904	Earthenware and china :—		Duty.	
	Baths, tubs and washstands, of earthenware, stone		30 %	\$ 70,927
	cement or clay, or of other material, N.O.P.....		30 %	35,445
	Brown or coloured earthen and stoneware, and		30 %	714,061
	Rockingham ware.....		30 %	8,265
	Decorated, printed or sponged, and all earthenware,			
	N.E.S.....			
	Demijohns, churns and crocks.....			
	White granite or ironstone ware, C.C. or cream		30 %	250,100
	coloured ware.....		30 %	420,851
	China and porcelain ware.....		35 %	55,319
	Earthenware tiles.....		30 %	56,388
	Manufactures of earthenware, N.E.S.			
	Total			1,611,356

TABLE 30.

STRUCTURAL MATERIALS.

EXPORTS OF SAND AND GRAVEL.

Calendar Year.	Tons.	Value.
		\$
1893.....	329,116	121,795
1894.....	324,656	86,940
1895.....	277,162	118,359
1896.....	224,769	80,110
1897.....	152,963	76,729
1898.....	165,954	90,498
1899.....	242,450	101,640
1900.....	197,558	101,666
1901.....	197,302	117,465
1902.....	159,793	119,120
1903.....	355,792	124,006
1904.....	399,809	129,803

MISCELLANEOUS,

NON-METALLIC.

MISCELLA-
NEOUS.

Arsenic.—The Deloro mine in Hastings county, province of Ontario, was closed down in 1903, and remained idle in 1904. This had hitherto been the source of the Canadian production of arsenic, which was recovered in the process of treating auriferous mispickel.

However, there was a small production of arsenic in 1904 derived from a new source. This was obtained from the cobalt and nickel arsenides, which are responsible for the total output this year; it amounted to 72 tons valued at \$903, according to returns made to the Ontario Bureau of Mines.

TABLE 1.
MISCELLANEOUS.
NON-METALLIC.
ANNUAL PRODUCTION OF ARSENIC.

Calendar Year.	Tons.	Value.
1885.....	440	\$17,600
1886.....	120	5,460
1887.....	30	1,200
1888.....	30	1,200
1889.....	Nil.	Nil.
1890.....	25	1,500
1891.....	20	1,000
1892.....	Nil.	Nil.
1893.....	"	"
1894.....	7	420
1895.....	Nil.	Nil.
1896.....	"	"
1897.....	"	"
1898.....	"	"
1899.....	57	4,872
1900.....	303	22,725
1901.....	695	41,676
1902.....	800	48,000
1903.....	257	15,420
1904.....	(a) 72	903

(a.) Arsenic in ore, &c.

TABLE 2.
MISCELLANEOUS.
NON-METALLIC.
IMPORTS OF ARSENIC.

MISCELLANEOUS.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	18,197	\$ 576	1893.....	447,079	\$12,907
1881.....	31,417	1,070	1894.....	292,505	10,018
1882.....	138,920	3,962	1895.....	1,115,697	31,932
1883.....	51,953	1,812	1896.....	664,854	27,523
1884.....	19,337	773	1897.....	152,275	8,378
1885.....	49,080	1,566	1898.....	291,967	14,270
1886.....	30,181	961	1899.....	582,883	24,203
1887.....	32,436	1,116	1900.....	230,730	11,035
1888.....	27,510	1,016	1901.....	159,263	8,361
1889.....	69,269	2,434	1902.....	106,857	6,004
1890.....	138,509	4,474	1903.....	298,375	11,824
1891.....	115,248	4,027	1904...Duty free.	414,065	12,421
1892.....	302,958	9,365			

TABLE 3.
MISCELLANEOUS.
NON-METALLIC.
IMPORTS OF CHALK.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$2,117	1893.....	\$ 9,966
1881.....	2,768	1894.....	11,308
1882.....	2,882	1895.....	7,730
1883.....	5,067	1896.....	6,467
1884.....	2,589	1897.....	7,432
1885.....	8,003	1898.....	9,338
1886.....	6,583	1899.....	10,461
1887.....	5,635	1900.....	12,212
1888.....	5,865	1901.....	11,629
1889.....	5,336	1902.....	11,337
1890.....	7,221	1903.....	16,497
1891.....	8,193	1904*.....	19,163
1892.....	9,558		

* Chalk prepared. Duty, 20 p. c.

MISCELLA-
NEOUS.TABLE 4.
MISCELLANEOUS.
NON-METALLIC.
IMPORTS OF WHITING.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	84,115	\$26,092	1893.....	88,835	\$25,563
1881.....	47,480	16,637	1894.....	103,633	26,649
1882.....	36,270	16,318	1895.....	102,751	25,441
1883.....	76,012	29,334	1896.....	113,791	27,322
1884.....	76,268	28,230	1897.....	102,453	22,541
1885.....	67,441	23,492	1898.....	166,293	25,761
1886.....	65,124	25,533	1899.....	134,884	34,310
1887.....	47,246	15,191	1900.....	127,455	34,575
1888.....	76,619	20,508	1901.....	209,868	60,878
1889.....	84,658	22,735	1902.....	153,982	42,136
1890.....	96,243	27,471	1903.....	139,804	39,867
1891.....	84,679	27,504	1904 ^a	186,919	42,507
1892.....	102,985	26,867			

^aWhiting or whitening, gilder's whiting, and Paris white. Duty free

Feldspar.—Ontario is responsible for the total production of feldspar in 1904. Two producers made returns, viz., The Kingston Feldspar Mining Company and Mr. Charles Jenkins. No output of feldspar is reported from the province of Quebec this year.

The following are interested in the feldspar industry:—

W. A. Allan, Victoria Chambers, Ottawa, Ont.

Kingston Feldspar Mining Company, Kingston, Ont.

Pennsylvania Feldspar Company, Gerard Inst. Bldg., Philadelphia, Pa., U.S.A.

Charles Jenkins, Petrolia, Ont.

TABLE 5.
MISCELLANEOUS.
NON-METALLIC.
PRODUCTION OF FELDSPAR.

Calendar Year.	Tons .	Value.
1890.....	700	\$3,500
1891.....	685	3,425
1892.....	175	525
1893.....	575	4,525
1894.....	Nil.	Nil.
1895.....	.....	*2,545
1896.....	972	*2,583
1897.....	1,400	3,290
1898.....	2,500	6,250
1899.....	3,000	6,000
1900.....	318	1,112
1901.....	5,350	10,700
1902.....	7,576	15,152
1903.....	13,928	18,966
1904.....	11,083	22,166

* Exports.

SESSIONAL PAPER No. 26a

Fire-clay.—The production of fireclay in 1904 according to the returns received amounted to 1,997 tons valued at \$8,592. This yield was altogether derived from Nova Scotia and New Brunswick. No production can be reported from British Columbia because no returns were received from that province although in previous years the output of fireclay in this province has amounted to more than half the total production. The material is usually obtained in connection with coal mining from the beds underlying the coal seams, it is mostly used locally in the construction and repairs of coke ovens and in connection with metallurgical operations.

TABLE C.
MISCELLANEOUS.
NON-METALLIC.
PRODUCTION OF FIRE-CLAY.

Calendar Year.	Tons.	Value.
1889.	400	\$4,800
1890.	Nil.	Nil.
1891.	250	750
1892.	1,991	4,467
1893.	540	700
1894.	539	2,167
1895.	1,329	3,492
1896.	842	1,805
1897.	2,118	5,759
1898.	670	1,680
1899.	599	1,295
1900.	1,245	4,130
1901.	3,979	5,920
1902.	2,741	4,283
1903.	2,639	3,523
1904.	1,997	8,592

Moulding Sand.—The figures given in Table 7, are derived chiefly from the returns of railway shipments and do not, therefore, nearly represent the total production. Deposits of sand answering the requirements of moulding sand are known to occur in almost every province and in many cases are worked for the local wants. Of those it is almost impossible to obtain returns of output from the producers. The greater proportion of the above railway shipments is derived from deposits in the Ontario Peninsula, and is exported to the United States.

MISCELLA-
NEOUS.

TABLE 7.
MISCELLANEOUS.
NON-METALLIC.

PRODUCTION OF MOULDING SAND.

Calendar Year.	Tons.	Value.
1887.....	160	\$ 800
1888.....	169	845
1889.....	170	850
1890.....	320	1,410
1891.....	230	1,000
1892.....	345	1,380
1893.....	4,370	9,086
1894.....	6,214	12,428
1895.....	6,765	13,530
1896.....	5,739	11,478
1897.....	5,485	10,931
1898.....	10,572	21,038
1899.....	13,724	27,430
1900.....	6,181	12,316
1901.....	14,705	29,410
1902.....	13,352	27,651
1903.....	3,658	7,256
1904.....	3,423	6,790

TABLE 8.
MISCELLANEOUS.
NON-METALLIC.

ANNUAL PRODUCTION OF QUARTZ.

Calendar Year.	Tons.	Value.
1890.....	200	\$ 1,000
1891.....		
1892.....		
1893.....	100	500
1894.....		
1895.....		
1896.....	10	50
1897.....		
1898.....	284	570
1899.....	600	1,260
1900-1904.....		

TABLE 9
MISCELLANEOUS.
NON-METALLIC.

MISCELLANEOUS.

IMPORTS OF "SILEX"—CRYSTALLIZED QUARTZ.

Fiscal Year.	Cwt.	Value.
1880.....	5,252	\$ 2,290
1881.....	3,251	1,659
1882.....	3,283	1,678
1883.....	3,543	2,058
1884.....	3,259	1,709
1885.....	3,527	1,443
1886.....	2,520	1,313
1887.....	14,533	5,073
1888.....	4,808	2,385
1889.....	5,130	1,211
1890.....	1,768	2,617
1891.....	3,674	1,929
1892.....	1,429	1,244
1893.....	2,447	1,301
1894.....	2,451	1,521
1895.....	2,882	1,881
1896.....	3,289	2,174
1897.....	2,564	3,415
1898.....	3,104	2,773
1899.....	3,951	2,595
1900.....	4,021	2,876
1901.....	3,562	2,106
1902.....	4,388	3,858
1903.....	3,514	2,762
1904.....Duty free.	5,547	4,409

Magnesite.—A production of 200 tons of magnesite is reported from British Columbia. This is a new addition to the list of Canadian mineral products, and as such it is interesting to note. However, there seems to be more than mineralogical interest regarding this, and we feel justified in quoting the Provincial Mineralogist of British Columbia concerning this occurrence and its possibilities :—

“A very curious and unusual occurrence of magnesite is found actually within the townsite of Atlin and less than a hundred yards from the Government office. The formation in the vicinity of the town is composed of the magnesian rocks. On these rocks overlain with wash, is the townsite, rising from the lake to a height of about 200 feet. Skirting the townsite on the rear—that is, the east—is a low depression or flat ‘draw,’ swampy in character, devoid of trees, and in places showing ‘hummocks’ of white magnesite which seems to be growing up from the swamp level ; for certainly these deposits are constantly rising higher and higher, and now form mounds 5 to 8 feet above the swamp level. The deposit is exposed on the surface over several acres and is, when dry, perfectly white. It

MISCELLANEOUS.

has been dug into for a depth of about 10 feet, and continues equally pure and clean from all foreign matter such as clay or gravel, as on the surface. This deposit was at first considered to be simply an accumulation of magnesite formed from the decomposition of the surrounding rocks and deposited by surface waters in this swamp. If such was its origin, it seems incredible that the deposit should be so free from clay and other materials, equally portable by water, and that it should be deposited in mounds above the water level. It seems probable, therefore, that the deposit is not from water, but that underlying this draw some particular stratum in the magnesian rock occurred, which, being softer, was more easily worn away, so forming the draw, and being more susceptible to the action of swamp waters carrying carbonic acid, was altered from an oxide of magnesia into the carbonate of magnesia or 'magnesite' in which operation it would be greatly increased in bulk, and so rise in mounds, seeming to 'grow up' from below. In this connexion attention is drawn to the analysis, given further on, of a mineral spring in the vicinity.

"The magnesite deposit has been staked as a mineral claim by A. C. Hirschfeld, of Atlin, who, during the season of 1904, dug from the surface exposures some 200 tons of the material which was sacked and shipped to San Francisco, Cal., as an experimental lot. The transportation companies are understood to have given a rate of \$8 per ton from Atlin to California, which apparently still leaves a margin of profit for the producers. It is understood that this shipment was intended to be used in the manufacture of 'magnesia brick' for furnace linings. The remarkable purity of the deposit would seem, however, to render it applicable for other uses, and this would justify a higher price being paid for it than is at present realized."

"The writer saw the magnesite being mined and no selection of the material was necessary; it was simply shovelled into sacks. A sample from the shipment brought by the writer to Victoria, and analysed in the Government laboratory, gave the following:—

Iron.....	Trace	Silica.....	1.12%
Alumina.....	"	Carbonate Magnesia(MgCO ₃)	88.62%
Sulphates.....	None	Oxide (Mg. O.)	2.44%
Chlorides.....	"	Moisture.....	0.80%

"Near the north end of the townsite of Atlin and flowing out underground from the swamp in which the magnesite deposit occurs, is a mineral-bearing spring. In 1900 Mr. J. C. Gwillim, then of the Geological Survey, took some of this water to Ottawa for analysis, upon which Dr. Hoffmann, chemist of the Survey, reports as follows:—

SESSIONAL PAPER No. 26a

'This water was found to contain: Potassa, traces; soda, very small quantity; lime, very small quantity; magnesia, somewhat large quantity; ferrous oxide, trace; sulphuric acid, very small quantity; carbonic acid, large quantity; chlorine, very small quantity; silica, trace; organic matter, faint traces.

MISCELLANEOUS.

'The magnesia amounted approximately to 1.834 parts in 1,000, an amount which would correspond to 3.851 of magnesium carbonate, or 5.869 of magnesium bicarbonate. It is more than probable that it is to the water of this and similar springs in the vicinity that the deposits of hydro-magnesite occurring back of Atlin owe their origin.'

In the Province of Quebec, in the township of Grenville, Argenteuil county, magnesite has been found both in situ and in boulders. Mr. W. B. McAllister in 1904, shipped two tons of the mineral as an experiment. A series of analyses of specimens from the deposit gave contents of magnesium carbonate of 76 to 83 per cent, while picked specimens contained as much as 95.50 per cent. A full description of the deposit with analyses, etc., will be found in the report of the Section of Chemistry and Mineralogy of the Geological Survey, Vol. XIII, Part R.

Molybdenite.—Some molybdenite ore was mined in 1903, in the township of Sheffield, county of Addington. Many occurrences of this mineral have been reported and there is good demand for it, but the deposits so far located do not seem to be large enough to be worked profitably. The molybdenite is usually found disseminated in quartz veins, and great difficulty has been experienced in concentrating it sufficiently for the market. At the request of the Geological Survey, some experiments in mechanical concentration of molybdenite were conducted in the laboratories of McGill University a few years ago, and the result seemed to show that, for the samples dealt with, after ordinary cobbing and hand picking it was not economical to submit the ore to any further process of extraction.

MISCELLA-
NEOUS.

TABLE 10.
MISCELLANEOUS.
NON-METALLIC.
ANNUAL PRODUCTION OF SOAPSTONE AND TALC.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.....	50	\$ 400	1896.....	410	1,230
1887.....	100	800	1897.....	157	350
1888.....	140	280	1898.....	405	1,000
1889.....	195	1,170	1899.....	450	1,960
1890.....	917	1,239	1900.....	1,420	6,365
1891.....	Nil	Nil	1901.....	259	842
1892.....	1,374	6,240	1902.....	689	1,804
1893.....	717	1,920	1903.....	990	2,739
1894.....	916	1,640	1904.....	840	1,875
1895.....	475	2,138			

Tripolite.—Only a very limited quantity of tripolite was produced in 1904. The only deposits worked are in Nova Scotia, and as a rule a sufficient quantity of the material is produced in one season to last two years. This accounts for the apparent spasmodic and irregular production.

TABLE 11.
MISCELLANEOUS.
NON-METALLIC.
PRODUCTION OF TRIPOLITE.

Calendar Year.	Tons.	Value.
1896.....	644	\$ 9,960
1897.....	15	150
1898.....	1,017	16,660
1899.....	1,000	15,000
1900.....	336	1,950
1901.....	850	15,300
1902.....	1,052	16,470
1903.....	835	16,700
1904.....	320	6,400

INDEX.

	PAGE.
Letter of Transmittal	3
Explanatory Notes.	5
Summary of Production.....	Opposite 8
General Review of the Mineral Industry of Canada.....	7-13

METALLIC PRODUCTS.

Precious Metals—

Gold.....	14-24
Silver.....	24-28
Copper.....	28-36
Iron.....	36-55
Lead.....	56-62
Nickel.....	62-64
Zinc.....	64-67

Miscellaneous Metallic—

Aluminium.....	68
Antimony.....	68
Cobalt.....	70
Mercury.....	70
Platinum.....	71
Palladium.....	73
Tin.....	73

NON-METALLIC PRODUCTS.

Abrasive Materials	74-78
Asbestos.....	79-82
Coal and Coke.....	83 103
Chromite.....	104
Graphite.....	105-107
Gypsum.....	107-111
Manganese.....	112
Mica.....	114
Mineral Water	115
Natural Gas.....	116
Mineral Pigments—	
Ochres.....	117
Barytes.....	120
Petroleum.....	121
Bounty Act and Regulations..	126
Phosphate.....	128
Pyrites.....	130
Salt.....	131

D-GEOLOGICAL SURVEY OF CANADA

A. P. LOW, B.Sc., DIRECTOR

(SECTION OF MINES

ANNUAL REPORT ON THE MINERAL INDUSTRIES OF CANADA

FOR

1905



OTTAWA

PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST
EXCELLENT MAJESTY

1907

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[No. 26a—1907] *Price, 10 cents.*

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STAFF OF THE MINES SECTION.

ELFRIC D. INGALL, M.E., A.R.S.M.,
in charge.

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THEO. C. DENIS, B.Sc. JNO. MCLEISH, B.A.

MRS. W. SPARKS, Records Clerk.

OTTAWA, January 10, 1907.

To A. P. Low, Esq., B. Sc.,
Director and Deputy Head,
Geological Survey Dept.

SIR,—I beg herewith to hand you the Annual Statistical Report of the Mineral Industries of Canada giving the complete and revised information regarding these industries for the year ending December 31, 1905. This has been preceded by an advance statement of the Mineral Production dated March 2, 1906, which, as usual, was only provisional and subject to alteration. Complete data relating to the mineral industries cannot be obtained until well on in the year following that dealt with so that compilation of the final report can only be commenced late in the succeeding year and its issue is thus delayed.

Besides the preparation of the accompanying report, the staff of the Section has, as usual, been kept busy in many other kindred directions, such as answering numerous inquiries regarding the mineral resources, the mining and metallurgical industries of the country, as well as in collecting, filing and indexing all available information regarding the same. Mining districts have been visited and studied as far as time and means permitted.

Acknowledgment is heartily accorded of the work performed by the staff of the Section in respect of all its functions. Apart from the collection and compilation of the Statistics, which is Mr. McLeish's chief charge, he has taken especial interest in the Structural Materials and has made some preliminary studies in the field in this connexion. For several years now Mr. Denis has been engaged in the field in investigation of the coal, gas and petroleum fields of Canada, and the results of his work will appear shortly in bulletin form. A similar work covering copper in Eastern Canada has been commenced by myself and will appear as a re-issue of the Bulletin on this subject already issued by the Survey.

I am Sir,

Your obedient servant,

ELFRIC DREW INGALL,
Mining Engineer to the Geological Survey.

EXPLANATORY NOTES.

YEAR AND TON USED.

The year referred to throughout this report is the calendar year, except for the figures of imports, which refer to the fiscal year ending June 30. The ton is that of 2,000 pounds, unless otherwise stated.

EXPORTS AND IMPORTS.

The figures given throughout the report referring to exports and imports are compiled from data obtained from the books of the Customs Department, and will occasionally show discrepancies, which, however, there are no means of correcting.

The exports and imports under the headings of each province do not necessarily represent the production and consumption of the province; e.g., material produced in Ontario is often shipped from Montreal and entered there for export, so falling under the heading, Quebec.

NOTE.—N.E.S. = Not elsewhere specified.

VALUES ADOPTED.

The values of the metallic minerals produced, as per returns to this Department, are calculated on the basis of their metallic contents at the average market price of the metal for the current year. Spot values have been adopted for the figures of production of the non-metallic minerals.

GENERAL NOTES.

As in the past, care is taken to avoid interference with private interests in the manner of publishing results, and all returns of production of individual mines are treated as confidential, unless otherwise arranged with those interested. The confidence of the mining community, thus gained, has resulted in an increasingly general response to our circulars, although to complete our data, personal application is still necessary in a small number of instances, and a yet more prompt response on the part of all applied to, will help still further towards an earlier publication of the material.

The figures given throughout the reports are based, as far as possible, upon returns obtained direct from the various operators, or from official data, and the totals are checked by comparison with railway shipments, exports, and all other available sources of information. It can be therefore fairly claimed that they are as accurate as it is possible to make such figures.

After investigation of the subject we have, however, found that in the nature of things, export and railway figures can only be taken as approximately correct in most instances. In the case of the export figures entries are made, as a rule, by those having no technical knowledge of mineral substances, and in the case of the railways but few of the shipments are actually weighed, so that car-load lots, for instance, may differ considerably from the theoretical load of the car.

The lists of operators given throughout the report are not put forward as complete in every case, only those known to be active being included. Producers finding their names omitted are invited to communicate with this office that they may be included in the next issue.

CORRECTIONS—ALTERATIONS.

Corrections and alterations have been made throughout this report wherever they seemed to be called for, according to more complete and reliable data, available since previous issues.

The tabulated statement given in the folded sheet at the beginning of the report represents a compilation of all the similar statements found in previous reports, re-modelled and further revised wherever possible.

MINES SECTION.

Mineral Production of Canada, Calendar Years 1895 to 1905.

[illegible]

(a) Value at mine, quarry or works.

(b) Not reported

(c) Copper contents of ore, matte, &c., at the average market price for the year

(d) Günter, Sime,

(e) Lead content
4.0 Ni-1-1(7) Nickel
(8) Includes cool

(b) Crude oil col.

(b) Crude oil content

compared

The above figures re-

Offering type show

11

(15) *Exhausta* only

(n) Pig iron from Canadian ore only. Previous to 1950 the production of iron has been entered as sec, the figures for iron for these years are given however in the body of the report.

statement conform with that adopted for recent years.

INTRODUCTION.

A reference to the accompanying general table shows that the grand total of the mineral production of Canada for 1905 was valued at \$69,525,170. For 1904, as compared with 1903, there was, unfortunately, a shrinkage of about 2.7 per cent to record, so that it is gratifying to find that not only was this falling off made up but that the increase over 1904 amounts to \$9,451,273, or equivalent to nearly 16 per cent.

The uniform basis of valuation invariably adopted by this Department enables a comparison to be made, and it will be noted the present year's total is just about \$40,000,000 greater than that for 1895, or a growth of 200 per cent.

The increases and decreases in the total valuations of the important items in the general table are exhibited in the table following.

INCREASES AND DECREASES IN VALUE.

Products.	Increases.	Decreases.
	Value.	Value.
	\$	\$
Copper.....	2,191,025	.....
Gold.....	.....	1,852,122
Pig iron (from Canadian ore).....	24,252	.....
Lead.....	1,059,411	.....
Nickel.....	3,331,373	.....
Cobalt.....	63,880	.....
Silver.....	1,570,580	.....
Zinc.....	.....	.....
Asbestos and a-bestic.....	276,907	.....
Coal.....	928,032	.....
Corundum.....	39,608	.....
Gypsum.....	211,694	.....
Natural gas.....	51,185	.....
Petroleum.....	.....	79,867
Pyrites.....	.....	8,547
Salt.....	.....	920
Cement, natural.....	.....	39,973
Cement, Portland ..	625,748	.....
	10,373,195	1,981,429

It will be noticed that substantial increases are shown by all the leading industries except in the case of gold in which a very considerable falling off has to be recorded. This is altogether due to the continued decrease in the production of the Yukon placers, which has been continuous now for some years. This shrinkage has been offset by increases in all the other gold mining districts of the country, amounting to over \$300,000. An interesting feature is the increase in the output of cobalt, which is a new member among the metallics, appearing for the first time only last year. The items in the above table indicate the great prosperity of the mineral industry of Canada, representing as they do nearly 83 per cent of the whole.

PROPORTIONAL INCREASES AND DECREASES OF DIFFERENT MINERAL PRODUCTS.

Products.	Quantity.		Value.	
	Increase.	Decrease.	Increase.	Decrease.
	p.c.	p.c.	p.c.	p.c.
Metallic—				
Copper	16·21		41·28	
Gold		11·25		11·25
Pig iron (from Canadian ore only)		18	2·41	
Pig iron (from both home and imported ores)	73·11		75·57	
Lead	51·51		65·50	
Nickel	78·96		78·96	
Silver	67·55		76·72	
Cobalt	313·70		173·07	
Non-metallic—				
Asbestos and asbestic	40·85		22·57	
Coal	5·00		5·59	
Corundum	65·55		36·15	
Gypsum	27·80		56·53	
Mica			10·58	
Natural gas			15·58	
Petroleum	25·94			8·53
Salt		3·06		28
Portland cement	47·91		48·58	
Granite			50·86	

In the above table the proportional increases and decreases in the chief industries are given both for quantity and value. A study of the figures given will show to what extent the increased or decreased values given in the preceding table are due to higher or lower prices obtainable for the various products. It will be noticed that leaving gold out, the prices of copper, lead and silver were much higher than for the previous year, whilst pig iron shows a slight advance and cobalt a very marked decrease in value. The latter feature is due to the depressing effect on the market of the large supply of this metal rendered available as a result of the discoveries at Cobalt, Ontario.

SESSIONAL PAPER No. 23a

Amongst the non-metallic products the increases and decreases are fairly evenly distributed. In this class the matter is often complicated by the proportions of different grades of products contributing to the total for each industry. Thus a proportional raise in the values does not necessarily mean higher prices throughout, it may indicate a relatively larger output of the higher priced products of any given industry.

PROPORTIONATE VALUE OF DIFFERENT MINERAL PRODUCTS, 1905.

Products.	Contributing over 10 p.c.	Contributing between 10 and 1 p.c.	Contributing under 1 p.c.	Total.
1 Coal	25.20			
2 Gold	21.01			
3 Nickel	10.86			
4 Copper	10.78			
5 Bricks		5.66		
6 Silver		5.20		
7 Lead		3.85		
8 Cement		2.75		
9 Building stone		2.63		
10 Asbestos and Asbestic		2.16		
11 Iron and iron ore (Canadian).....		1.74		
12 Petroleum.....		1.23		
13 Clay products (pottery, tiles, &c., except bricks).....		1.08		
14 Lime.....		1.08		
15 Gypsum.....			0.84	
16 Natural gas.....			0.55	
17 Salt.....			0.46	
18 Granite.....			0.33	
19 Mica.....			0.26	
20 Corundum.....			0.22	
21 Sundry under 1 per cent.			1.85	
Total.				100.00

In studying the mineral industry of the country as a whole it becomes interesting to realize to what extent the different branches are to be credited as contributors to the grand total. This view of the matter is set forth in the foregoing table.

It will be noticed that the most valuable of the mineral assets of the country is coal, which stands pre-eminent, and if to this be added the other fuel items, viz.: petroleum and natural gas, 27 per cent of the whole is accounted for. The rest of the non-metallic class, other than structural materials, are to be credited only with some 5 per cent. The aggregate contribution of the structural material class is nearly 14 per cent, the balance of nearly 54 per cent being contributed by the metallic class.

Thus nearly 81 per cent of the whole value of the mineral output of Canada for 1905 is due to the activities in those industries exploiting our fuels and metallic mineral deposits.

The figures given in the table illustrate the relative importance of the individual industries without further comment. It may be pointed out, however, in regard to bricks, building stone, clay products and lime that, as explained elsewhere in the report, the available figures are probably incomplete and were it possible to get fuller data these items would take a much higher proportional rank.

With regard to the iron and iron ores item it should be remarked that the figures deal only with the results of treating Canadian ore and therefore are not to be taken as illustrative of the proportional importance of the iron smelting industries of the country. The smelting industries, as distinct from mining proper, are dealt with fully in the body of the report.

PRODUCTION BY PROVINCES, 1904 AND 1905.

Province.	1904.		1905.	
	Value of Production.	Per cent.	Value of Production.	Per cent.
	\$		\$	
Nova Scotia	11,212,746	18.7	11,507,047	16.55
New Brunswick	559,913	0.9	559,035	0.80
Quebec	3,688,482	6.1	4,405,975	6.33
Ontario	12,582,843	20.9	18,833,292	27.09
Manitoba, Alberta, Saskatchewan and Yukon	12,713,613	21.2	11,841,634	17.04
British Columbia	19,316,300	32.2	22,378,187	32.19
Total	60,073,897	100.00	69,525,170	100.00

In the above table are compared the proportional contributions for 1904 and 1905 of the several provinces of the Dominion. As the figures given are reduced to a uniform basis of valuation a comparison is rendered possible.

It will be observed that whilst the mineral industry of the eastern provinces show a steady growth the figures for Ontario and British Columbia are considerably augmented. In the former case this results partly from the working of the rich veins of the Cobalt district, although the higher prices ruling for metals have been an important factor in both cases.

In the prairie provinces and Yukon the falling off is of course due to the shrinkage in the gold output of the Yukon placers.

SESSIONAL PAPER No. 26a

EXPORTS.

MINERALS AND MINERAL PRODUCTS OF CANADA DURING CALENDER YEAR 1905.

Products.	Value.	Products.	Value.
Aluminum	\$ 509,777	Manufactures of metals,	
Antimony ore	27,118	other than iron or steel..	\$ -81,945
Arsenic	5,400	Mica	179,049
Asbestos	1,386,115	Mineral pigments	7,704
Barytes	14,343	" water	2,137
Bricks	5,888	Nickel	1,569,693
Cement	3,143	Oil, crude	2
Clay, manufactures of	35	" refined	2,078
Chromite	45,072	Ores unspecified	687,565
Coal	4,029,457	Platinum	283
Coke	509,908	Phosphate	1,253
Copper	5,443,873	Plumbago, crude	7,596
Feldspar	27,660	" mfrs. of	518
Gold	13,706,969	Pyrites	55,767
Grindstones	17,461	Salt	6,112
" rough	7,407	Sand and gravel	152,805
Gypsum, crude	388,474	Silver	2,777,218
" ground	2,673	Stone unwrought	13,089
Iron and steel	1,287,558	" wrought	3,545
Iron ore	407,881	Other articles	71,331
Lead	1,046,541		
Lime	85,723	Total	34,579,886
Manganese ore	1,720		

EXPORTS.

DESTINATION OF PRODUCTS OF THE MINE, DURING THE FISCAL YEAR, 1904-1905.

Destination.	Value.	Destination.	Value.
United States	\$28,764,461	St. Pierre	\$26,765
Great Britain	991,874	Mexico	18,131
Belgium	841,121	Denmark	16,017
Newfoundland	370,968	British West Indies	9,895
China	289,540	Holland	7,236
Germany	251,155	Cuba	775
Bermuda	72,379	Australia	695
Hong Kong	66,693	New Zealand	559
France	54,853	Spain	347
Japan	40,789	Argentina	208
Italy	39,077		
Norway and Sweden	36,764		
British Africa	32,027		
			\$31,932,329

The foregoing two tables are compiled from figures to be found in the reports of the Department of Trade and Commerce illustrative of the exports of mineral substances from the country.

As might be expected the metallic ores and products form the greater bulk of the sales to other countries. Under the headings Gold, Silver, Copper, Nickel, Lead, Iron and Steel comes nearly 75 per cent of the values of all the exports and if to these be added Coal and Coke, only about 14 per cent is left for the balance of the mineral substances exported. In the order of their importance the chief items are as follows:—Gold, 39·8 per cent; Copper, 15·72 per cent; Coal and Coke, 11·65; Silver, 8·30; Nickel, 4·54 per cent; Asbestos, 4·20 per cent; Iron and Steel, 3·72 per cent and Lead, 3·03 per cent.

As might be expected when the amount of United States capital invested in mining in Canada is considered, most of Canada's mineral which is exported finds its way into the United States. The figures in the table of destinations show that over 90 per cent is there marketed. Other American countries take about 0·15; Asia, 1·06 and Europe 3·84 per cent. To various points in the British Empire the exports of mineral and metallic substances amount to 4·95 per cent. of the whole.

The foregoing tables are all made to cover the calendar year for comparison with the data so presented throughout the body of the report. The subjoined statement of imports is made to cover the fiscal year ending June 30, 1904. The items therein contained have been selected from the reports of the Trade and Commerce Department.

Although the selection is necessarily made in a more or less arbitrary manner many interesting points come to light. In the items running over one million it will be noted that very much the largest number, representing over 44·7 per cent of the grand total, are those including machinery, hardware and highly manufactured articles, &c., and which would come in competition with the manufacturer rather than with the miner or smelter. Semi-finished products of iron such as pig, blooms, plates, etc., together with various iron alloys used as raw material by manufacturers of more finished products amounts to nearly eleven and a half million dollars or about 13·7 per cent. The country imports nearly twenty and a-half million dollars worth of coal, of which about half is anthracite and half bituminous. The items before mentioned, although comprising but 13 entries out of the seventy-seven in the table, cover 83 per cent of the whole. The remaining sixty-four items cover a great variety of substances, many of which will doubtless be eventually replaced by home products, whilst others will continue to come in owing to the greater proximity of the foreign source of production and for other similar causes.

SESSIONAL PAPER No. 26a

IMPORTS.

MINERAL AND MINERAL PRODUCTS FOR FISCAL YEAR 1904-1905.

Products.	Value.	Products.	Value.
Alumina.....	\$ 129,822	Litharge.....	\$ 57,736
Alum and aluminous cake.....	58,385	Lithographic stone.....	13,683
Aluminium.....	182,970	Manganese, oxide of.....	6,832
Antimony.....	6,664	Magnesia.....	3,747
" salts.....	6,164	Marble and mfrs. of.....	145,466
Arsenic.....	7,661	Mercury.....	48,412
Asbestos and mfrs. of.....	116,836	Metallic alloys—	
Asphaltum.....	133,615	Babbitt metal.....	33,961
Bells and gongs.....	80,251	Brass and mfrs. of.....	1,340,349
Bismuth.....	1,410	Britannia metal.....	32,979
Blast furnace slags.....	7,017	German silver.....	76,874
Borax.....	88,923	Type metal.....	6,136
Bricks and tiles.....	369,561	Mineral and bituminous	
" fire.....	392,195	substances, N.E.S.....	58,569
Buhrstones.....	2,607	Mineralogical specimens.....	2,997
Cement.....	1,263,828	Mineral and metallic pig-	
Chalk.....	26,172	ments, paints and colours.....	1,337,159
Clays.....	176,805	Mineral waters.....	161,790
Coal.....	20,439,723	Nickel.....	19,076
" tar and pitch.....	150,141	Ores of metals, N.E.S.....	1,775,158
Coke.....	807,842	Paraffine wax.....	7,795
Copper and mfrs. of.....	2,042,429	candles.....	15,293
Cryolite.....	11,966	Petroleum and products of.....	2,151,514
Crucibles, clay or plumbago.....	31,353	Phosphate (fertilizer).....	15,877
Chloride of lime.....	54,889	Phosphorus.....	1,415
Earthenware.....	1,636,214	Platinum, mfrs. of.....	61,719
Electric carbons.....	91,622	Precious stones.....	1,489,076
Emery.....	55,230	Pumice.....	8,447
Feldspar, quartz, flint, &c.....	18,770	Salt.....	399,010
Fullers' earth.....	4,967	Saltpetre.....	96,304
Gold and silver and mfrs. of.....	502,357	Sand and gravel.....	92,722
Graphite and mfrs. of.....	46,434	Slate and mfrs. of.....	93,228
Gypsum, plaster of Paris, &c.....	47,710	Stone and mfrs. of.....	302,724
Iron and steel—		Sulphate of copper.....	94,182
Pigs, scraps, blooms, &c.....	1,463,983	" iron.....	3,164
Rolled, bars, plates, &c.,		Sulphur.....	242,251
including chrome steel.....	9,711,620	Sulphuric acid.....	8,227
Ferro-silicon, ferro-man-		Tin and manufactures of.....	2,791,757
ganesse, &c.....	246,815	Whiting.....	51,215
Manufactures of, machi-		Zinc and mfrs. of.....	363,404
nery, hardware, &c.....	29,357,106		
Kainite.....	6,427	Total.....	83,521,375
Lead and mfrs. of.....	261,555		
Lime.....	71,588		

PRECIOUS METALS.

Under this heading, the metals gold and silver, are considered together. The rarer metals of the platinum group are considered under their respective names as platinum and palladium in miscellaneous metals.

GOLD.

The Geological Survey Department is indebted to the various Provincial Mining Bureaus for much of the statistical information given in the following tables.

The gold output of Canada in 1905 was \$14,610,395 as compared with an output of \$16,462,517 in 1904, a total decrease of \$1,852,122 or 11.25 per cent. The gold production has steadily decreased since 1900, when a maximum output of \$27,908,153 was reached, the falling off being due in the main to the gradual lessening of the output of the Yukon placer deposits which reached their highest production in the year mentioned. The other gold producing districts of Canada all show increases in 1905.

Of the total output, 57 per cent was derived from the Yukon district, and 96 per cent from the Yukon and British Columbia combined. Nearly 64 per cent of the whole was obtained from placer and hydraulic workings, &c., and 36 per cent from lode mining.

TABLE 1.

PRECIOUS METALS.

GOLD.—ANNUAL PRODUCTION IN CANADA.

Calendar Year.	*Ounces. Fine.	Value.	Calendar Year.	*Ounces. Fine.	Value.
1887.....	57,465	\$ 1,187,804	1897.....	291,582	\$ 6,027,016
1888.....	53,150	1,098,610	1898.....	666,445	13,775,420
1889.....	62,658	1,295,159	1899.....	1,028,620	21,261,584
1890.....	55,625	1,149,776	1900.....	1,350,176	27,908,153
1891.....	45,022	930,614	1901.....	1,167,320	24,128,503
1892.....	43,909	907,601	1902.....	1,032,253	21,336,667
1893.....	47,247	976,603	1903.....	911,639	18,843,590
1894.....	54,605	1,128,688	1904.....	796,445	16,462,517
1895.....	100,806	2,083,674	1905.....	706,341	14,610,395
1896.....	133,274	2,754,774			

*Calculated from the value at the rate of \$20.67 per ounce.

TABLE 2.

PRECIOUS METALS.

GOLD—PRODUCTION BY PROVINCES AND DISTRICTS, CALENDAR YEAR 1905.

Provinces.	*Ounces. Fine.	Value.
Nova Scotia.....	(b) 13,708	\$ 283,353
Quebec.....	191	3,940
Ontario.....	(b) 4,403	91,000
North-west Territories—		
Yukon District.....	(a) 402,864	8,327,200
Saskatchewan River.....	(a) 121	2,500
British Columbia.....	(c) 285,554	5,902,402
Total.....	706,841	14,610,395

* Calculated from the value at the rate of \$20.67 per ounce.

(a) Placer gold.

(b) Gold from vein mining.

(c) As follows: Gold from placer mining.....\$ 969,300

" vein ".....4,933,102

\$5,902,402

Nova Scotia.—Although the gold output of Nova Scotia shows an increase of nearly a third more than in 1904, the output for 1905 is still but little more than half the production of 1903, and with the exception of the previous year, is the smallest output recorded since 1883, a period of 26 years. In 1905, there were mined and crushed about 57,774 tons of ore yielding 14,913 oz. 6 dwt. 9 grs. of gold valued at \$283,353, an average of 5 dwt. 4 grs. or \$4.99 per ton.

An interesting feature in connexion with the production of gold during the year, has been the mining and shipping of auriferous stibnite ore by the Dominion Antimony Company, from the mine at West Gore, Hants county, concerning which the following notes have been gleaned from the Nova Scotia Mines Report.

The amount of ore produced from the mine during the year was about 4,000 tons divided into two classes as follows:—

No. 1 ore—429 tons said to contain 46 per cent antimony and 2.56 ounces of gold per ton.

No. 2 ore—3,570 tons said to contain 8 per cent antimony, and \$10 in gold per ton.

Five hundred and twenty-seven tons of mixed ore were shipped to English smelting companies and contained in gold 1,232 oz. 16 dwt. 23 grs. valued at \$24,657. Only half of this amount, however, is received at present by the operators.

The smelter gives only a certain percentage of the gold values, and to recover these and save the heavy freight rates now paid, have been the objects of extensive experimenting. (See further under Antimony).

Mr. Weatherbe, deputy inspector, reports in the Nova Scotia Mines Report that 'the industry generally, has fallen off to a very marked degree, and with the closing of Dolliver Mountain, Brookfield (one of the most regular and largest producers for the past twelve years) the Bluenose, Nova Scotia and Mexican, Ecum Secum, Wine Harbour, &c., and the serious falling off in the returns from Caribou, Nova Scotia gold mining operations present a gloomy aspect.'

At the instance of the Nova Scotia Mining Society the Provincial Government employed an eminent mining engineer, Mr. T. A. Rickard, of New York, to report on the gold fields. Mr. Rickard spent from August 16th to Sept. 13th, 1905, in the province and visited the following districts: "Montague, Waverly, Renfrew, Oldham, Mount Uniacke, Caribou, Salmon River, Harrigan Cove, Goldenville, Cochran Hill, Forest Hill, Middle Country Harbour, Isaac Harbour, Goldboro, Lower Seal Harbour, West Gore, Leipsigate and Brookfield." His report has not yet been published.

Statistics of production in Nova Scotia are given in tables 3, 4, 5 and 6 following: Table 3 shows the annual gold output. Table 4 the tons of quartz crushed and the average yield per ton. Table 5 shows the total production of each district from 1862 to the end of 1895 as well as the average yield per ton, and table 6 shows the amount of ore crushed and its yield per district for 1905.

TABLE 3.
PRECIOUS METALS.
GOLD.—NOVA SCOTIA:—ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year.	Value.
1862.....	\$141,871	1884.....	\$313,554
1863.....	272,448	1885.....	432,971
1864.....	390,349	1886.....	455,564
1865.....	496,357	1887.....	413,631
1866.....	491,491	1888.....	436,939
1867.....	532,563	1889.....	510,029
1868.....	400,555	1890.....	474,990
1869.....	348,427	1891.....	451,503
1870.....	387,392	1892.....	389,965
1871.....	374,972	1893.....	381,095
1872.....	255,349	1894.....	389,338
1873.....	231,122	1895.....	453,119
1874.....	178,244	1896.....	493,568
1875.....	218,629	1897.....	562,165
1876.....	233,585	1898.....	538,590
1877.....	329,205	1899.....	617,604
1878.....	245,253	1900.....	598,553
1879.....	268,328	1901.....	546,963
1880.....	257,823	1902.....	627,357
1881.....	209,755	1903.....	527,806
1882.....	275,090	1904.....	214,209
1883.....	301,207	1905.....	283,353

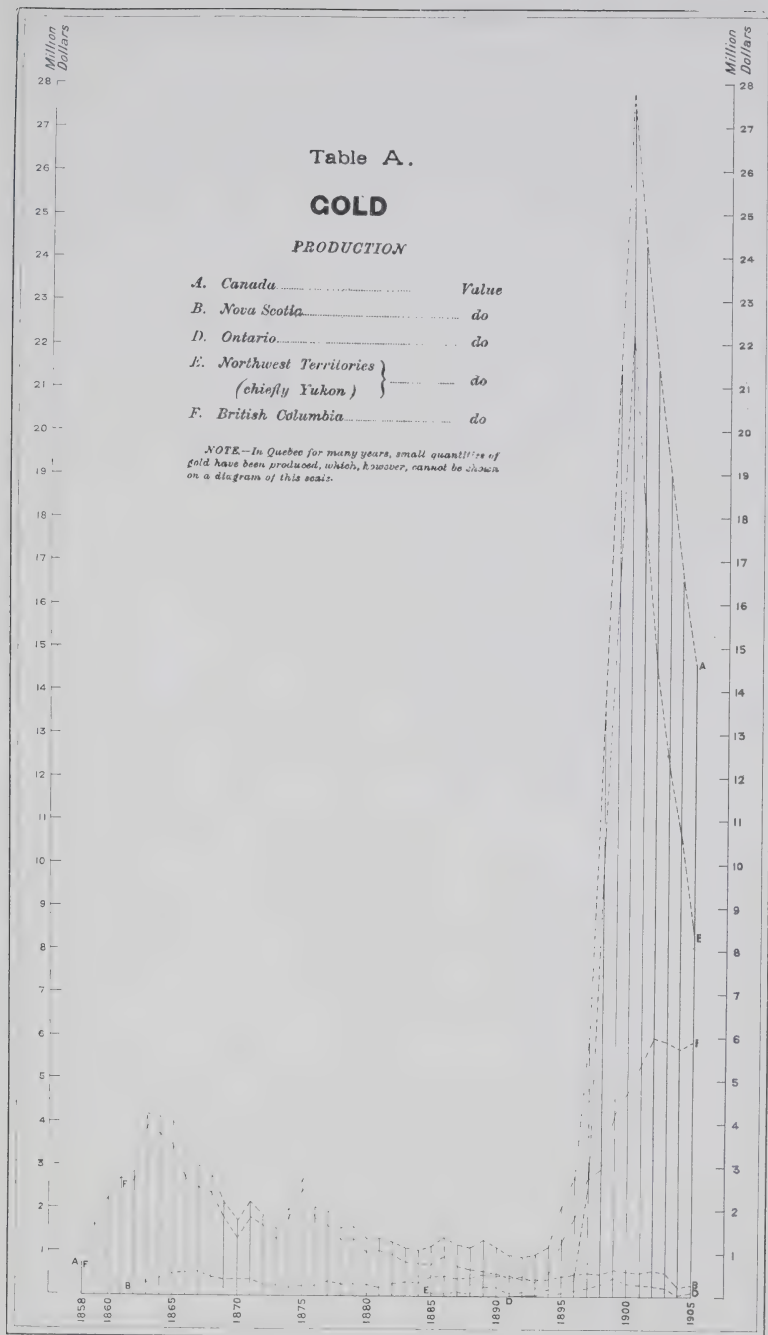
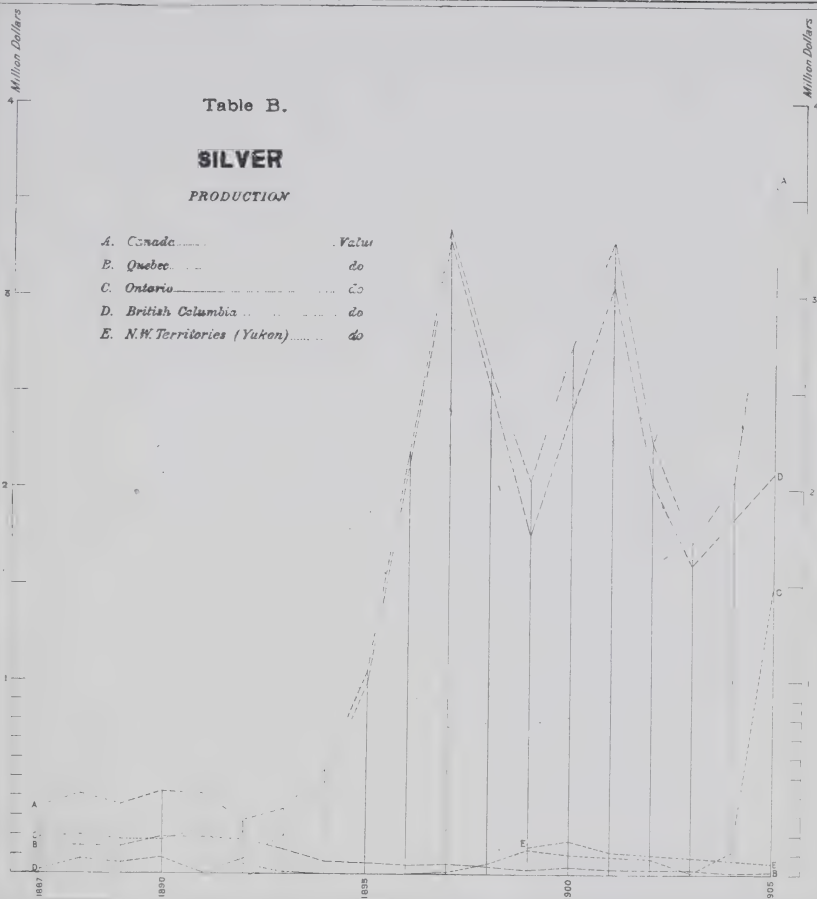


Table B.

SILVER

PRODUCTION

A. Canada.....	Value
B. Quebec.....	do
C. Ontario.....	do
D. British Columbia ..	do
E. N.W. Territories (Yukon).....	do



SESSIONAL PAPER No. 26a

TABLE 4.

PRECIOUS METALS.

GOLD.—NOVA SCOTIA: ORE TREATED AND YIELD OF GOLD PER TON.

Calendar Year.	Tons Treated.	Yield of Gold per Ton.	Calendar Year.	Tons Treated.	Yield of Gold per Ton.
1862.....	6,473	\$21.91	1884.....	25,186	12.44
1863.....	17,000	16.02	1885.....	28,890	14.98
1864.....	21,431	18.21	1886.....	29,010	15.70
1865.....	24,421	20.32	1887.....	32,280	12.81
1866.....	32,157	15.28	1888.....	36,178	12.08
1867.....	31,384	16.96	1889.....	39,160	13.02
1868.....	32,259	12.41	1890.....	42,749	11.11
1869.....	35,144	19.91	1891.....	36,351	12.42
1870.....	30,824	12.56	1892.....	32,552	11.98
1871.....	30,787	12.17	1893.....	42,354	8.99
1872.....	17,089	14.94	1894.....	55,357	7.04
1873.....	17,708	13.05	1895.....	60,600	7.47
1874.....	13,844	12.87	1896.....	69,169	7.13
1875.....	14,810	14.76	1897.....	73,192	7.68
1876.....	15,490	15.08	1898.....	82,774	6.50
1877.....	17,369	18.95	1899.....	12,226	5.50
1878.....	17,989	13.63	1900.....	87,390	6.85
1879.....	15,936	16.83	1901.....	91,948	5.32
1880.....	13,997	18.42	1902.....	93,842	6.68
1881.....	16,556	12.66	1903.....	103,856	5.08
1882.....	21,081	13.04	1904.....	45,436	4.71
1883.....	25,954	\$11.60	1905.....	57,774	4.90

TABLE 5.

PRECIOUS METALS.

GOLD.—NOVA SCOTIA:—PRODUCTION OF THE DIFFERENT DISTRICTS FROM 1862 TO 1903, INCLUSIVE.

Districts.	Tons of Ore crushed.	Total Yield.			Average Yield per ton of 2000 lbs.
		Oz.	Dwt.	Gr.	
				Value at \$19.00 per oz.	
				\$	
Brookfield.....	98,092	43,214	2	8	8.37
Caribou.....	176,370	54,786	5	7	5.90
Central Rawdon..	13,340	10,121	11	21	14.42
Fifteen Mile Stream	42,483	18,800	0	5	8.41
Lake Catcha.....	18,613	15,075	11	18	15.39
Malaga.....	24,787	17,486	12	4	13.40
Montague.....	27,529	40,483	11	4	27.94
Oldham.....	52,997	56,739	8	21	20.34
Renfrew.....	52,452	45,439	19	13	16.46
Salmon River.....	104,136	34,100	11	21	6.32
Sherbrooke.....	318,157	159,841	6	13	9.55
Stormont.....	327,274	91,557	16	0	5.32
Tangier.....	40,677	23,124	17	6	10.80
Uniacke.....	64,495	43,765	18	3	12.89
Waverly.....	155,908	70,833	12	23	8.63
Wine Harbour.....	69,856	39,798	7	3	10.82
Other districts.....	135,705	84,103	4	13	11.78
Total.....	1,722,871	849,272	17	15	9.37

TABLE 6.

PRECIOUS METALS.

GOLD.—NOVA SCOTIA:—DISTRICT DETAILS, CALENDAR YEAR, 1905.

Districts.	Mines	Mills.	Tons Crushed.	Total Yield of Gold.			Average Yield of Gold per Ton.		
				Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Brookfield	2	2	10,315	3,993	6	14	..	7	18
Caribou.....	5	4	8,336	861	10	0	..	1	23
Cow Bay.....	1	1	112	127	11	11	1	2	19
Harrigan Cove.....	1	1	65	15	0	0	..	4	15
Kemptville.....	1	1	20	7	9	0	..	7	11
Killag.....	1	1	215	35	6	0	..	3	7
Lawrencetown.....	1	1	199	26	1	0	..	2	15
Leipsigat.....	1	1	6,235	2,210	11	0	..	7	2
Lake Catcha.....	1	1	48	35	1	0	14	14	
Miller's Lake.....	1	1	50	59	0	0	1	3	14
Montague.....	1	1	523	124	8	8	..	4	18
Oldham.....	3	1	1,342	1,565	1	0	1	3	8
Renfrew.....	2	1	241	30	5	0	..	2	12
Sherbrooke.....	3	3	5,381	984	10	0	..	3	16
Stormont.....	6	6	21,970	3,042	7	5	..	2	18
Tangier.....	1	1	220	26	12	4	..	2	10
Uniacke.....	3	2	80	133	9	6	1	13	8
Vogler's Cove.....	1	1	200	43	7	19	..	4	8
Whiteburn.....	1	1	4	4	3	0	1	0	18
Wine Harbour.....	1	1	1,691	332	10	0	..	3	22
Mortared.....	.....	.....	.....	22	19	15	..	..	..
Stibnite ore.....	.....	.....	527	1,232	16	23	2	6	19
Total.....	37	32	57,774	14,913	6	9	..	5	4

Quebec.—There was practically no gold derived from alluvial workings in the province of Quebec during 1905, although some prospecting work was being done in Dudswell district. The figures of production for 1905, given in table 7, represent the small quantity of gold saved from the pyritous ores mined near Sherbrooke, in the Eastern Townships.

SESSIONAL PAPER No. 26a

TABLE 7.
PRECIOUS METALS.
GOLD.—QUEBEC :—ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year.	Value.
1877.....	\$12,057	1892.....	\$12,987
1878.....	17,937	1893.....	15,696
1879.....	23,972	1894.....	29,196
1880.....	33,174	1895.....	1,281
1881.....	56,661	1896.....	3,000
1882.....	17,093	1897.....	900
1883.....	17,787	1898.....	6,089
1884.....	8,720	1899.....	4,916
1885.....	2,120	1900.....	Nil.
1886.....	3,981	1901.....	3,000
1887.....	1,604	1902.....	8,073
1888.....	3,740	1903.....	3,712
1889.....	1,207	1904.....	2,900
1890.....	1,350	1905.....	3,940
1891.....	1,800		

Ontario—About \$91,000 worth of gold was mined in Ontario during 1905.

Statistics of production in previous years are given in Table 8.

TABLE 8.
PRECIOUS METALS.
GOLD.—ONTARIO :—ANNUAL PRODUCTION.

Calendar Year.	*Ounces. Fine.	Value.
1887.....	327	\$ 6,760
1888.....		
1889.....		
1890.....		
1891.....	97	2,000
1892.....	344	7,118
1893.....	708	14,637
1894.....	1,917	39,624
1895.....	3,015	62,320
1896.....	5,563	115,000
1897.....	9,158	189,294
1898.....	12,864	265,889
1899.....	20,395	421,591
1900.....	14,392	297,495
1901.....	11,845	244,837
1902.....	11,119	229,828
1903.....	9,097	188,036
1904.....	1,935	40,000
1905.....	4,403	91,000

*Calculated from the value at the rate of \$20.67 per ounce.

Alberta and Yukon District.—The placer deposits of the Saskatchewan river in the vicinity of Edmonton, produced about \$2,500 in gold during 1905.

The production of gold in the Yukon, based on sales made to the various receiving offices of the United States Mint was in 1905 \$8,327,200. This is a decrease of \$2,172,800 as compared with the production in 1904.

TABLE 9.

PRECIOUS METALS.

GOLD.—NORTH-WEST TERRITORIES :—PRODUCTION.

Calendar Year.	Yukon District.		Saskatchewan River.	
	*Ounces. Fine.	Value.	*Ounces Fine.	Value.
		\$		\$
1885 }	4,838	100,000	.....	.....
1886 }				
1887.....	3,387	70,000	102	2,100
1888.....	1,935	40,000	58	1,200
1889.....	8,466	175,000	968	20,000
1890.....	8,466	175,000	194	4,000
1891.....	1,935	40,000	266	5,500
1892.....	4,233	87,500	508	10,506
1893.....	8,515	176,000	466	9,640
1894.....	6,047	125,000	725	15,000
1895.....	12,095	250,000	2,419	50,000
1896.....	14,514	300,000	2,661	55,000
1897.....	120,948	2,500,000	2,419	50,000
1898.....	483,793	10,000,000	1,209	25,000
1899.....	774,069	16,000,000	726	15,000
1900.....	1,077,649	22,275,000	242	5,000
1901.....	870,827	18,000,000	726	15,000
1902.....	701,500	14,500,000	484	10,000
1903.....	592,646	12,250,000	48	1,000
1904.....	507,983	10,500,000	24	500
1905.....	402,864	8,327,200	121	2,500
Total.....	5,606,710	115,890,700	14,366	296,946

* Calculated from the value at the rate of \$20.67 per ounce.

SESSIONAL PAPER No. 26a

The following statement of gold production of the Yukon royalty paid, etc., is taken from the report of the Timber and Mines Branch of the Department of the Interior :—

Fiscal Year.	Total Gold Produc- tion.	Total Exemption.	Royalty Collected on.	Royalty Paid.
	\$	\$	\$	\$
1898.....	3,072,773	339,845	2,732,928	273,292
1899.....	7,582,283	1,699,657	5,882,626	588,262
1900.....	9,809,464	2,501,744	7,307,720	730,771
1901.....	9,162,082	1,927,666	7,236,522	592,660
1902.....	9,566,340	1,199,114	8,367,225	331,436
1903.....	12,113,015	.....	12,113,015	302,893
1904.....	10,790,663	.....	10,790,663	272,217
1905.....	8,222,054	.....	8,222,054	206,760

British Columbia.—The value of the output of gold in British Columbia in 1905 was, \$5,902,402 as compared with \$5,704,908 in 1904 an increase of \$197,494 or nearly 3½ per cent. Of the output of 1905 \$969,300 was derived from placer workings, dredging, hydraulic-ing, &c., and \$4,933,102 from lode ores.

The Provincial Mineralogist in his report to the Minister of Mines for the province, gives the special features of the gold production during the year as follows :

“The production of placer gold this past year is valued at \$969,300 a decrease of some \$146,000, or 13 per cent as compared with that of 1904, and is the smallest output made any year since 1901. This falling off in production is attributable to a very dry summer, preceded by a winter with little snow, with a resulting decreased supply of water for hydraulic-ing, in which class of mining the output seems to be in direct proportion to the water available for use, since the deposits of gravel seem to be fairly regular in their tenure of gold, and the output is measured by the amount of gravel washed.

“In the Atlin district, the output this past year was about \$475,000, considerably less than in 1904, but still in excess of any year previous to that.

“In this district the drought was not so severely felt, as about 40 per cent of the gold is mined by ‘individual’ methods in which a large amount of water is not necessary.

“In the Dease lake section of Cassiar, mining is carried on largely by hydraulic methods, and between the dryness of the season and the obstacles presented in getting in over a long pack trail, the season was not successful.

"The Cariboo Mining Division of the Cariboo district about held its own this past season, but the production of the Quesnel division was some 40 per cent less, owing to the very short run made by the largest producing property—The Consolidated Cariboo—due to an unprecedentedly low water supply, a trouble which the company has set about remedying by bringing in water from another watershed to supplement the present supply, at the expenditure of a large amount of money.

"In the Fraser River district, the dry season should not have had so much effect, but individual mining on the bars appears to have been replaced by dredging, and the dredges have not met the expectations of the operators, for the reason, it is claimed, that the dredges built have proved to have been of too weak construction, and were so constantly under repair as to reduce the actual working time below the margin of profit.

"Steam shovels have not yet been fully proven, and the one formerly operated in south east Kootenay, has been, at least temporarily abandoned.

"The Atlin shovel apparently worked very well, but the appliances for handling the tailings and for washing the gravel proved quite inadequate, so much so that the capacity of the shovel was never fully demonstrated. Enough was learned, however, to indicate that for our conditions in the north, the steam shovel is apt to prove much more effective than the dredge.

"The value of the output of gold from this province from lode mining for the year 1905 was \$4,933,102, an increase over the preceding year of some \$343,494 or about $7\frac{1}{2}$ per cent due entirely to the increased tonnage of gold-bearing copper ore smelted in the Boundary district.

"The greater part of the lode gold produced is found in combination with copper; in fact only 11 per cent of the total gold is produced from stamp-mills and even in these mills about half the values are obtained in concentrates, which are afterwards smelted."

Statistics of the yearly production in this province since 1858 are given in table 10, and detailed statistics of the production by districts are shown in table 11.

SESSIONAL PAPER No. 26a

TABLE 10.

PRECIOUS METALS.

GOLD:—BRITISH COLUMBIA:—ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year.	Value.
1858.....	\$ 705,000	1882.....	\$ 954,085
1859.....	1,615,072	1883.....	794,252
1860.....	2,228,543	1884.....	736,165
1861.....	2,666,118	1885.....	713,738
1862.....	2,656,903	1886.....	903,651
1863.....	3,913,563	1887.....	693,709
1864.....	3,735,850	1888.....	616,731
1865.....	3,491,205	1889.....	588,923
1866.....	2,662,106	1890.....	494,436
1867.....	2,480,868	1891.....	429,811
1868.....	2,372,972	1892.....	399,525
1869.....	1,774,978	1893.....	379,535
1870.....	1,336,956	1894.....	530,530
1871.....	1,799,440	1895.....	1,266,954
1872.....	1,610,972	1896.....	1,788,206
1873.....	1,305,749	1897.....	2,724,657
1874.....	1,844,618	1898.....	2,939,852
1875.....	2,474,904	1899.....	4,202,473
1876.....	1,786,648	1900.....	4,732,105
1877.....	1,608,182	1901.....	5,318,703
1878.....	1,275,204	1902.....	5,961,409
1879.....	1,290,058	1903.....	5,873,036
1880.....	1,013,827	1904.....	5,704,908
1881.....	1,046,737	1905.....	5,902,402

TABLE 11.

PRECIOUS METALS.

GOLD:—BRITISH COLUMBIA.—PRODUCTION BY DISTRICTS—1905.

Districts.	Gold, Placer.		Gold, Lode.	
	Ounces.	Value.	Ounces.	Value.
Cariboo—		\$		\$
Cariboo Division.....	15,000	300,000		
Quesnel ".....	4,800	96,000		
Omineca ".....	500	10,000		
Cassiar—				
Atlin Lake Division.....	23,750	475,000		
All other divisions.....	1,250	25,000	187	3,865
East Kootenay—				
Fort Steele Division.....	708	14,160		
Other divisions.....	50	1,000	14	289
West Kootenay—				
Ainsworth Division.....			28	579
Nelson ".....	150	3,000	17,667	365,177
Slocan and Slocan City.....			134	2,770
Trail Creek.....			129,843	2,683,855
All other divisions.....	280	5,600	2,707	55,954
Lillooet.....	1,500	30,000	125	2,584
Yale:				
Grand Forks, etc.....	90	1,800	78,689	1,626,501
Similkameen.....	57	1,140	19	393
Yale.....	230	4,600	610	12,608
Coast and other districts.....	100	2,000	8,637	178,527
Totals.....	48,465	969,300	238,660	4,933,102

The following tables show the production of the Rossland mines and illustrate the average results attained during the past twelve years:—

NET PRODUCTION PER SMELTER RETURNS.

Year.	Ore, tons, 2,000 lb.	Gold, oz.	Silver, oz.	Copper, lb.	Value.
1894.....	1,856	3,723	5,357	106,229	\$ 75,510
1895.....	19,693	31,497	46,702	840,420	702,459
1896.....	38,075	55,275	89,285	1,580,635	1,243,360
1897.....	68,804	97,024	110,068	1,819,586	2,097,280
1898.....	111,282	87,343	170,804	5,232,011	2,470,811
1899.....	172,665	102,976	185,818	5,693,889	3,229,086
1900.....	217,636	111,625	167,378	2,071,865	2,739,300
1901.....	283,360	132,333	970,460	8,333,446	4,621,299
1902.....	329,534	162,146	373,101	11,667,807	4,893,395
1903.....	360,786	145,353	209,537	8,652,127	4,255,958
1904.....	312,991	133,095	181,830	7,119,876	3,760,866
1905.....	330,618	129,843	147,753	5,800,294	3,672,828

AVERAGE NET SMELTER RETURNS OR ACTUAL YIELD PER TON.

Year.	Gold.	Silver.	Copper.	Value.
	Ounces.	Ounces.	Per cent.	\$ cts.
1894.....	2·00	2·89	2·85	40·69
1895.....	1·60	2·41	2·10	35·67
1896.....	1·45	2·34	2·08	32·65
1897.....	1·42	1·60	1·32	30·48
1898.....	·78	1·54	2·35	22·10
1899.....	·596	1·07	1·65	18·70
1900.....	·513	·769	·476	12·58
1901.....	·467	3·424	1·470	16·31
1902.....	·492	1·132	1·770	14·85
1903.....	·403	·581	1·199	11·80
1904.....	·425	·581	1·137	12·01
1905.....	·393	·447	·877	11·11

SILVER.

Silver is produced in Canada in the provinces of Quebec, Ontario and British Columbia and a certain quantity is also recovered from the placer gold found in the Yukon. The total output in Canada in 1905 was 5,994,292 ounces valued at \$3,617,675 or 60·35 cents per ounce, the average value of fine silver in New York for the year. Compared with the output in 1904 an increase in quantity of 2,416,766 ounces or 67 per cent is shown and in value of \$1,570,580 or over 76 per cent. This large increase is due in a measure to the doubling of the output of argentiferous lead ore from East Kootenay, B.C., but chiefly to a large output from the recently opened up native silver deposits at Cobalt, Ontario.

SESSIONAL PAPER No. 26a

Statistics of the production of silver are shown in Table 12, while the details of provinces are given in Table 13.

TABLE 12.

PRECIOUS METALS.

SILVER.—ANNUAL PRODUCTION.

Year.	Ounces.	Value.	Average Price per ounce.	Year.	Ounce.	Value.	Average Price per ounce.
		\$	Cts.			\$	Cts.
1887....	355,083	347,271	98·0	1897....	5,558,446	3,323,395	59·79
1888....	437,232	410,998	94·0	1898....	4,452,333	2,593,929	58·26
1889....	383,318	358,785	93·6	1899....	3,411,644	2,032,658	59·58
1890....	400,687	419,118	104·6	1900....	4,468,225	2,740,362	61·33
1891....	414,523	409,549	98·0	1901....	5,539,192	3,265,354	58·95
1892....	310,651	272,130	86·0	1902....	4,291,317	2,238,351	52·16
1893....	330,128	330,128	77·0	1903....	3,198,581	1,709,642	53·45
1894....	847,697	534,049	63·0	1904....	3,577,526	2,047,095	57·22
1895....	1,578,275	1,030,299	65·28	1905....	5,994,292	3,617,675	60·35
1896....	3,205,343	2,149,503	67·06				

TABLE 13.

PRECIOUS METALS.

SILVER.—PRODUCTION BY PROVINCES.

CALENDAR YEAR.	ONTARIO.		QUEBEC.		BRITISH COLUMBIA.		YUKON TERRITORY.	
	Ounces.	Value.	Ounces.	Value.	Ounces.	Value.	Ounces.	Value.
		\$		\$		\$		\$
1887..	190,495	186,304	146,898	143,666	17,690	17,301	.....	.....
1888..	208,064	195,580	149,388	140,425	79,780	74,993	.....	.....
1889..	181,609	169,986	148,517	139,012	53,192	49,787	.....	.....
1890..	158,715	166,016	171,545	179,436	70,427	73,666	.....	.....
1891..	225,633	222,926	185,584	183,357	3,306	3,266	.....	.....
1892..	41,581	36,425	191,910	168,113	77,160	67,592	.....	.....
1893..	.....	8,689	.....	126,439	.....	195,000	.....	.....
1894..	.....	.....	101,318	63,830	746,379	470,219	.....	.....
1895..	.....	.....	81,753	53,369	1,496,522	976,930	.....	.....
1896..	.....	.....	70,000	46,942	3,135,343	2,102,561	.....	.....
1897..	5,000	2,990	80,475	48,116	5,472,971	3,272,289	.....	.....
1898..	85,000	49,521	74,932	43,655	4,292,401	2,500,753	.....	.....
1899..	202,000	120,352	40,231	23,970	2,939,413	1,751,302	230,000	137,034
1900..	161,650	99,140	58,400	35,817	3,958,175	2,427,548	290,000	177,857
1901..	151,400	89,250	41,459	24,440	5,151,333	3,036,711	195,000	114,953
1902..	145,000	75,632	42,500	22,163	3,917,917	2,043,586	185,900	96,965
1903..	17,777	9,502	28,600	15,287	2,996,204	1,601,471	156,000	83,382
1904..	206,875	118,376	15,000	8,583	3,222,481	1,843,935	133,170	76,201
1905..	2,441,000	1,473,192	19,620	11,841	3,439,417	2,075,757	94,255	56,885

Since 1894, the argentiferous lead ores of British Columbia have been responsible for the greater part of the silver output in Canada,

over ninety per cent being obtained from that province. In 1905, however, the large silver production at Cobalt, Ontario, has somewhat reduced the relative importance of the western province in the total output. The proportions in this year were Ontario nearly 41 per cent, British Columbia 57 per cent.

Quebec.—The output from the Province of Quebec is represented by the small amount contained in the pyrite ore mined in the vicinity of Capelton in the Eastern Townships.

Ontario.—In this province the chief interest centres, of course, about the recent discoveries of very rich silver ores at Cobalt on the Temiscaming and Northern Ontario railway.

Descriptions of this camp are to be found in the Summary report of the Director of the Geological Survey and in a special report by Mr. W. G. Miller, the Provincial Geologist, issued by the Bureau of Mines of Ontario to which reference may be made for details.

A short visit of a few days was made by Mr. Ingall also.

The peculiar features of this camp consist in the small thickness of the veins which is, however, more than offset by their great number and wide distribution and the great richness of their contents.

In the prominence of native silver as a constituent of the ores and in their cutting a younger, flat-lying sedimentary formation over-lying Archaean rocks as well as in the presence of basic intrusives, they show some similarity to the well known silver veins of the Thunder Bay district worked for several years with startling results.

Whilst these points of similarity exist, however, there are many prominent features in which the two districts differ.

At Cobalt smaltite and niccolite are prominent whilst they were rare constituents of the Thunder bay ores in which zinc-blende and galena were most largely in evidence.

In the latter case too, an almost constant association of the rich ore bodies was the carbonaceous character of the enclosing country rocks a phenomenon not characteristic of the Cobalt camp. Then too, in the Port Arthur district the veins were much thicker and more persistent but less in number.

The similarity of the Geological formation enclosing the Cobalt veins is with the rocks exhibited in the typical Huronian district of Bruce Mines and other places along that belt rather than with the Animikie of Thunder bay.

SESSIONAL PAPER No. 26a

British Columbia.—The production by districts in British Columbia is shown in the following table.

TABLE 14.

PRECIOUS METALS.

SILVER :—BRITISH COLUMBIA.—PRODUCTION BY DISTRICTS.

District.	1902.	1903.	1904.	1905.
	Ounces.	Ounces.	Ounces.	Ounces.
Cariboo.....	4			
Cassiar.....	224	53	185	477
Kootenay East—				
Fort Steele division.....	114,506	28,537	590,186	1,137,872
Other divisions.....	27,918	59,006	20,964	16,880
Kootenay West—				
Ainsworth division.....	320,719	108,678	90,004	99,781
Nelson ".....	273,870	190,003	198,795	116,729
Slocan ".....	2,223,810	1,466,931	1,540,170	1,045,948
Trail Creek ".....	373,101	209,537	181,830	147,753
Other divisions.....	241,584	392,354	148,201	121,551
Lillooet.....		12		
Yale—				
Osoyoos division.....	219,798	320,749	245,155	630,407
Yale.....	542	15	625	3,863
Coast and other districts.....	121,841	220,329	206,366	118,156
Totals.....	3,917,917	2,996,204	3,222,481	3,439,417

According to the provincial mineralogist: "About 70 per cent of silver produced in the province was found associated with lead in argentiferous galena, the remainder being chiefly in conjunction with copper ores.

"The total silver production was 3,439,417 ounces, valued at \$1,971,818, the largest output the province has made since 1901 despite the fact of a decrease in the Slocan of 494,000 ounces. The increase is due primarily to the extensive working this year of the low grade argentiferous galena of the Fort Steele district, which district shows an increased production of nearly 550,000 ounces; and secondly to the increased tonnage of the large copper mines in the Boundary and the working of certain smaller but higher grade properties in that district, resulting in an increased silver production in the Boundary of about 385,000 ounces."

TABLE 15.

PRECIOUS METALS.

SILVER.—EXPORTS OF ORE.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$ 25,957	1896.....	\$ 2,271,959
1887.....	206,284	1897.....	3,576,391
1888.....	219,008	1898.....	2,902,277
1889.....	212,163	1899.....	1,623,905
1890.....	204,142	1900.....	2,341,872
1891.....	225,312	1901.....	2,026,727
1892.....	56,688	1902.....	1,820,058
1893.....	213,695	1903.....	1,989,474
1894.....	359,731	1904.....	1,904,394
1895.....	994,354	1905.....	2,777,218

Yukon.—As already stated the silver output credited to the Yukon represents that alloyed with the gold yielded by the placers worked in that district.

The discoveries of promising deposits of rich silver ores in the most southerly portion of the Territory on the Windy Arm of Tagish lake, seem to give promise of another fruitful source of the metal. These discoveries are described by Mr. R. G. McConnell in a bulletin recently issued by the Geological Survey.

According to his description there would seem to be a series of strong and persistent yeins carrying silver in the form of sulph-antimonides and sulph-arsenides with some native silver, argentite, etc., accompanied by sulphurets of copper, iron, zinc, etc.

COPPER.

The special features of interest in the copper output of Canada in 1905 were the greatly increased production of copper from the nickel copper ores of the Sudbury district, Ontario, and the continued increase in the output of the low grade copper ores of the Boundary district, British Columbia.

The higher prices ruling for copper during the year have also stimulated the exploration and development of both new and old copper properties through the Dominion, and a continuation of these prices will no doubt tend toward a considerable increase in output in the near future.

SESSIONAL PAPER No. 26a

So far, most of the ores from which copper is obtained in Canada contain considerable values in other constituents. In Quebec the copper is derived from the pyrite deposits near Sherbrooke, which are primarily mined for the manufacture of sulphuric acid but which contain also, in addition to the copper, slight values in gold and silver. The production in Ontario is still practically represented by the copper contents of the nickel-copper ores of the Sudbury district, which contain also values in gold, silver, cobalt and the platinum group of metals. In British Columbia much the greater part of the output is now derived from the low grade sulphide ores of the Boundary district, the values of which in gold and silver would enable them to be worked at a profit, it is believed, even should the price of copper fall much below its present high level.

The total production of copper in Canada, in 1905, was 48,092,753 pounds, valued at \$7,497,660, and is the highest output yet recorded, being an increase over 1904, of 6,709,031 pounds or 16.21 per cent, and more than twice the output of any year previous to 1901. The value given is at the average price for the year of refined copper in New York.

Owing to the higher prices prevailing during 1905, the increase in total value was over 41 per cent.

The production by Provinces was as follows :—

Quebec.....	1,621,243 lbs.
Ontario.....	8,779,259 "
British Columbia.....	37,692,251 "
Total.....	48,092,753 "

It will thus be seen that of the total output, British Columbia contributed in 1905, over 78 per cent., Ontario over 18 per cent. and Quebec a little over three per cent.

Statistics of production, exports and imports, are given in the following tables :—

TABLE 1.

COPPER.

ANNUAL PRODUCTION.*

Calendar Year.	Lbs.	Increase or Decrease.		Value.	Increase or Decrease.		Average Price per Pound.
		Lbs.	%		\$	%	
				\$			Cts
1886.	3,505,000			385,550			11·00
1887.	3,260,424	244,576	6·99	366,798	18,752	4·86	11·25
1888.	5,562,864	<u>2,302,440</u>	<u>70·60</u>	927,107	<u>560,309</u>	<u>152·70</u>	<u>16·66</u>
1889.	6,809,752	<u>1,246,888</u>	<u>22·40</u>	936,341	<u>9,234</u>	<u>0·99</u>	<u>13·75</u>
1890.	6,013,671	796,081	11·69	947,153	<u>10,812</u>	<u>1·15</u>	<u>15·75</u>
1891.	9,529,401	<u>3,515,730</u>	<u>58·46</u>	1,226,703	<u>279,550</u>	<u>29·51</u>	<u>12·87</u>
1892.	7,087,275	2,442,126	25·63	818,580	408,123	33·27	11·55
1893.	8,109,856	<u>1,022,381</u>	<u>14·40</u>	871,809	<u>53,229</u>	<u>6·50</u>	<u>10·75</u>
1894.	7,708,789	401,067	4·94	736,960	134,849	15·46	9·56
1895.	7,771,639	<u>62,850</u>	<u>·81</u>	836,228	<u>99,268</u>	<u>13·47</u>	<u>10·76</u>
1896.	9,393,012	<u>1,621,373</u>	<u>20·86</u>	1,021,960	<u>185,732</u>	<u>22·21</u>	<u>10·88</u>
1897.	13,300,802	<u>3,907,790</u>	<u>41·60</u>	1,501,660	<u>479,700</u>	<u>46·94</u>	<u>11·29</u>
1898.	17,747,136	<u>4,446,334</u>	<u>33·43</u>	2,134,980	<u>633,320</u>	<u>42·17</u>	<u>12·03</u>
1899.	15,078,475	2,668,661	15·04	2,655,319	<u>520,339</u>	<u>24·37</u>	<u>17·61</u>
1900.	18,937,138	<u>3,858,663</u>	<u>25·59</u>	3,065,922	<u>410,603</u>	<u>15·46</u>	<u>16·19</u>
1901.	37,827,019	<u>18,889,881</u>	<u>99·75</u>	6,096,581	<u>3,030,659</u>	<u>98·84</u>	<u>16·117</u>
1902.	38,804,259	<u>977,240</u>	<u>2·58</u>	4,511,383	1,585,198	26·00	11·626
1903.	42,684,454	<u>3,880,195</u>	<u>10·00</u>	5,649,487	<u>1,138,104</u>	<u>25·23</u>	<u>13·235</u>
1904.	41,383,722	1,300,732	3·05	5,306,635	342,852	6·07	12·823
1905.	48,092,753	<u>6,709,031</u>	<u>16·21</u>	7,497,660	<u>2,191,025</u>	<u>41·29</u>	<u>15·590</u>

* The production is altogether represented by the copper contained in ore, matte, &c., produced and shipped valued at the average market price for the year for fine copper in New York.

Note.—In the above table, increases are shown underlined, and decreases in the ordinary way.

TABLE 2.

COPPER.

EXPORTS OF COPPER IN ORE, MATTE, ETC.

Calendar Year.	Pounds.	Value.
		\$
1885.....		262,600
1886.....		249,259
1887.....		137,966
1888.....		257,260
1889.....		168,457
1890.....		398,497
1891.....		348,104
1892.....		277,632
1893.....	4,792,201	269,160
1894.....	1,625,389	91,917
1895.....	3,742,352	236,965
1896.....	5,462,052	281,070
1897.....	14,022,610	850,336
1898.....	11,572,381	840,243
1899.....	11,371,766	1,199,908
1900.....	23,631,523	1,741,885
1901.....	32,488,872	3,404,908
1902.....	26,094,498	2,476,516
1903.....	38,364,676	3,873,827
1904.....	38,553,282	4,216,214
1905.....	40,740,861	5,443,873

TABLE 3.

COPPER.

IMPORTS OF PIGS, OLD, SCRAP, ETC.

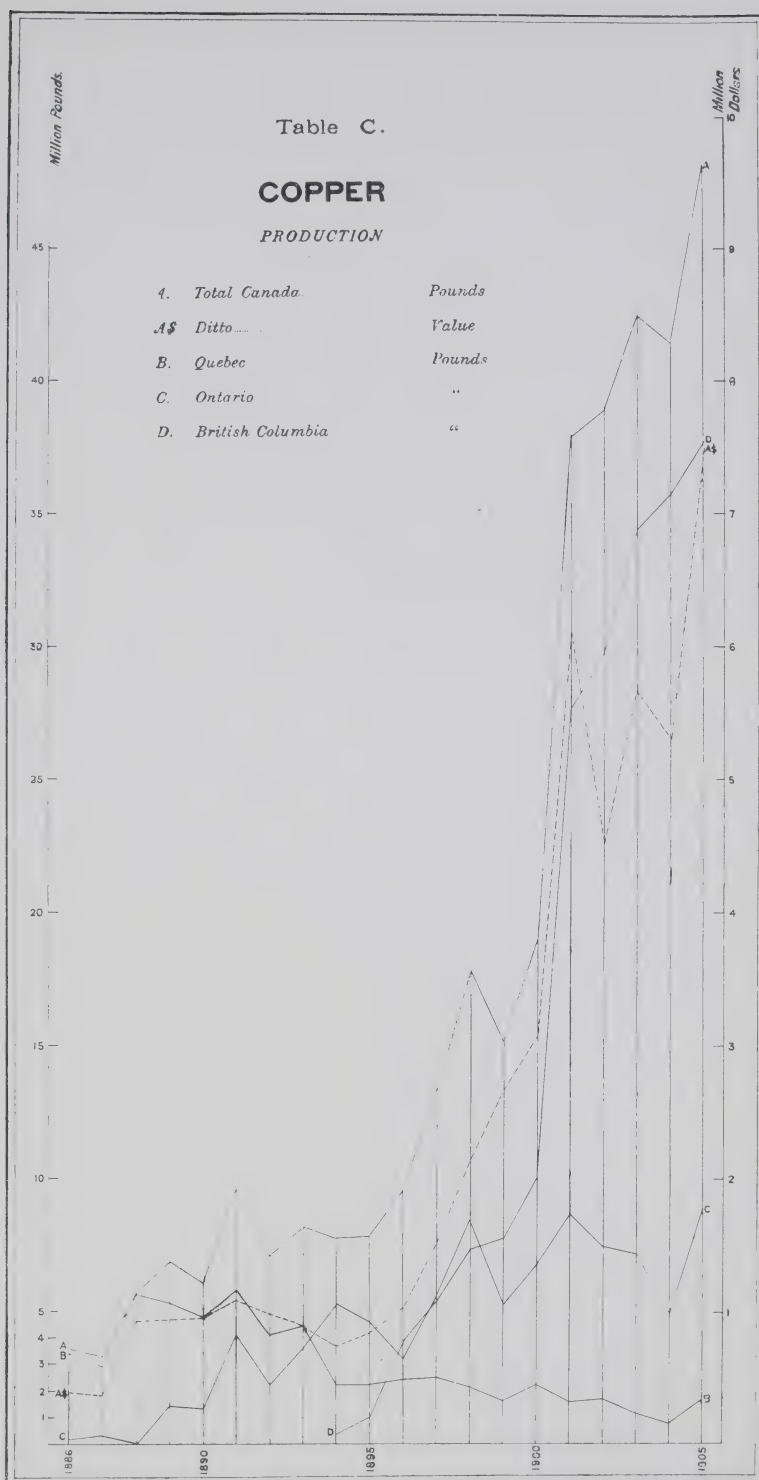
Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	31,900	2,130	1893.....	168,300	16,331
1881.....	9,800	1,157	1894.....	101,200	7,397
1882.....	20,200	1,984	1895.....	72,062	6,770
1883.....	124,500	20,273	1896.....	86,905	9,226
1884.....	46,200	3,180	1897.....	49,000	5,449
1885.....	28,600	2,016	1898.....	1,050,000	80,000
1886.....	82,000	6,969	1899.....	1,655,000	246,740
1887.....	40,100	2,507	1900.....	1,144,000	180,990
1888.....	32,300	2,322	1901.....	951,500	152,274
1889.....	32,300	3,288	1902.....	1,767,200	225,832
1890.....	112,200	11,521	1903.....	2,038,400	252,594
1891.....	107,800	10,452	1904.....	2,115,300	270,315
1892.....	343,600	14,894			
1905 { Copper, old and scrap or in blocks Duty free				222,000	25,371
{ Copper in pigs or ingots..... "				1,722,400	241,177
Total, 1905.....				1,944,400	266,548

TABLE 4.

COPPER.

IMPORTS OF MANUFACTURES.

Fiscal Year.		Value.		
		\$		
1880	.....	123,061		
1881	.....	159,163		
1882	.....	220,235		
1883	.....	247,141		
1884	.....	134,534		
1885	.....	181,469		
1886	.....	219,420		
1887	.....	325,365		
1888	.....	303,459		
1889	.....	402,216		
1890	.....	472,668		
1891	.....	563,522		
1892	.....	422,870		
1893	.....	458,715		
1894	.....	175,404		
1895	.....	251,615		
1896	.....	285,220		
1897	.....	264,587		
1898	.....	786,529		
1899	.....	551,586		
1900	.....	1,090,280		
1901	.....	951,045		
1902	.....	1,281,522		
1903	.....	1,291,635		
1904	.....	1,191,610		
1905.	Copper in bolts, bars and rods, in coils, or otherwise in lengths not less than 6 feet, unmanufactured.....	Duty. Free.	Pounds. 8,634,900	\$ 1,231,729
	Copper, in strips, sheets or plates, not planished or coated, &c.....	"	2,054,600	347,877
	Copper tubing in lengths not less than 6 feet, and not polished, bent or otherwise manufactured.....	"	326,154	77,587
	Copper rollers, for use in calico printing, imported by calico printers for use in their own factories..	"	.....	9,762
	Copper and manufactures of:—			
	Nails, tacks, rivets and burrs or washers..	30 p. c.	.....	3,043
	Wire, plain, tinned or plated.....	15 "	176,744	24,766
	Wire cloth, &c.....	25 "	.....	1,870
	All other manufactures of, N.O.P.....	30 "	.....	79,247
	Total			1,775,881



SESSIONAL PAPER No. 26a

Quebec.—As usual, the copper production in Quebec was derived chiefly from the pyrites ores of the Eastern Townships, which are mined primarily for the manufacture of sulphuric acid.

The Ascot mine on the west half of lot 8. Con. VIII of Ascot was worked for a short time, producing a small quantity of good grade ore which was treated at Capelton.

Statistics of production are given in table 5 below.

TABLE 5,
COPPER.
QUEBEC :—PRODUCTION.

Calendar Year.	Pounds.	Value.
		\$
1886.....	3,340,000	367,400
1887.....	2,937,900	330,514
1888.....	5,562,864	927,107
1889.....	5,315,000	730,813
1890.....	4,710,606	741,920
1891.....	5,401,704	695,469
1892.....	4,883,480	564,042
1893.....	4,468,352	480,348
1894.....	2,176,430	208,067
1895.....	2,242,462	241,288
1896.....	2,407,200	261,903
1897.....	2,474,970	279,424
1898.....	2,100,235	252,658
1899.....	1,632,560	287,494
1900.....	2,220,000	359,418
1901.....	1,527,442	246,178
1902.....	1,640,000	190,666
1903.....	1,152,000	152,467
1904.....	760,000	97,445
1905.....	1,621,243	252,752

Ontario—Statistics of the production of copper in Ontario since 1886 are shown in Table 6. This has nearly all been derived from the nickel-copper ores of Sudbury. The total quantity of nickel copper ore mined during the year was 277,766 tons, while 251,421 tons were smelted, producing 17,388 tons of high grade matte. The quantity of matte shipped during the year was 17,405 tons while 2,675 tons remained in stock at the close of the year. The copper contents of the matte shipped, including a small output of copper from a couple of mines in process of development was 8,779,259 pounds valued at \$1,386,686.

Two copper properties were being developed at Massey station during the year, but these have not yet become serious factors so far as output is concerned.

TABLE 6.

COPPER.

ONTARIO :—PRODUCTION.

Calendar Year.	Pounds.	Value.
		\$
1886.....	165,000	18,150
1887.....	322,524	36,284
1888.....	Nil.	Nil.
1889.....	1,466,752	201,678
1890.....	1,303,065	205,233
1891.....	4,127,697	531,234
1892.....	2,203,795	254,538
1893.....	3,641,504	391,461
1894.....	5,207,679	497,854
1895.....	4,576,337	492,414
1896.....	3,167,256	344,598
1897.....	5,500,652	621,023
1898.....	8,375,223	1,007,539
1899.....	5,723,324	1,007,877
1900.....	6,740,058	1,091,215
1901.....	8,695,831	1,401,507
1902.....	7,408,202	1,861,278
1903.....	7,172,533	949,285
1904.....	4,913,594	630,070
1905.....	8,779,259	1,368,686

British Columbia—As compared with the previous year, the copper production in British Columbia shows an increase in 1905 of over 5 per cent., the total output being 37,692,251 pounds. Of this amount, over 73 per cent was derived from the Boundary district, chiefly from the Granby mines, at Phoenix, the B.C. Copper Company (Mother Lode) at Deadwood and the Dominion Copper Company (Brooklyn, Stemwinder and Rawhide) at Phoenix; 15 per cent. was obtained from the Rossland Camp, the principal mines contributing being Le Roi, Centre Star, War Eagle, Le Roi No. 2, and Jumbo. Nine per cent.

SESSIONAL PAPER No. 26a

was obtained from the Coast districts, chiefly contributed by the Tyee and Marble Bay Mines.

Statistics of production are shown in tables 7 and 8.

TABLE 7.

COPPER.

BRITISH COLUMBIA—PRODUCTION.

Calendar Year.	Copper contained in ores, matte, &c.	Increase.		Value.
	Lb.	Lb.	%	
1894	324,680	.....	.....	\$ 31,039
1895	952,840	628,160	193	102,526
1896	3,818,556	2,865,716	301	415,459
1897	5,325,180	1,506,624	39	601,213
1898	7,271,678	1,946,498	36	874,783
1899	7,722,591	450,913	6	1,359,948
1900	9,977,080	2,254,489	29	1,615,289
1901	27,603,746	17,626,666	177	4,448,896
1902	29,636,057	2,032,311	7	3,445,488
1903	34,359,921	4,723,864	16	4,547,735
1904	35,710,128	1,350,207	3·7	4,579,110
1905	37,692,251	1,982,123	5·6	5,876,222

IRON.

Iron Ore.—The production of iron ore in Canada in 1905 is estimated at about 291,097 tons as compared with 219,046 tons in the previous year, an increase of 72,051 tons, or over 32 per cent.

Although there are numerous iron prospects and properties of possible great potential value in Canada, the actual output of ore is obtained from a very few mines.

In Nova Scotia the only iron mining done was by the Londonderry Iron and Mining Company, at their mines near Londonderry, Colchester county, and Torbrook, Annapolis county. The total output was 84,952 tons and was all utilized at the Company's blast furnaces at Londonderry.

In Quebec the bog ores of Champlain, Joliette, Drummond, and Nicolet counties, were as usual mined and used in the furnaces at Radnor Forges and Drummondville, the output of these ores for the year being 12,681 tons.

In Ontario comparatively small shipments were made from the Radnor mine, Eganville, Renfrew county, the greater part of the output coming from the Helen mine at Michipicoten. The total output was 193,464 tons. The output of the Radnor mine was used in the furnaces at Radnor Forges, Que., while of the output of the Helen mine, a little over 60 per cent. was exported to lower Lake Erie ports, the balance going chiefly to Hamilton, Ont.

No production was recorded for British Columbia.

TABLE 1.

IRON.

PRODUCTION OF ORE BY PROVINCES.

Calendar Year.	Nova Scotia.	Quebec.	Ontario.	British Columbia.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.
1886.....	44,388	.....	16,032	3,941	64,361
1887.....	43,532	13,401	16,598	2,796	76,330
1888.....	42,611	10,710	16,894	8,372	78,587
1889.....	54,161	14,533	.....	15,487	84,181
1890.....	49,206	22,305	.....	.....	76,511
1891.....	53,649	14,380	.....	950	68,979
1892.....	78,258	22,690	.....	2,300	103,248
1893.....	102,201	22,076	.....	1,325	125,602
1894.....	89,379	19,492	.....	1,120	109,991
1895.....	83,792	17,783	.....	1,222	102,797
1896.....	58,810	17,630	15,270	196	91,906
1897.....	23,400	22,436	2,770	2,099	50,705
1898.....	19,079	17,873	21,111	280	58,343
1899.....	28,000	19,420	25,126	2,071	74,617
1900.....	18,940	19,000	82,950	1,110	122,000
1901.....	18,619	15,489	272,538	7,000	313,646
1902.....	16,172	18,524	359,288	10,019	404,003
1903.....	40,335	12,035	209,634	2,290	264,294
1904.....	61,293	16,152	141,601	.....	219,046
1905.....	84,952	12,681	193,464	.....	291,097

TABLE 2.

IRON.

NOVA SCOTIA :—ANNUAL PRODUCTION OF ORE.

(Previous to 1886).

Calendar Year.	Tons.	Calendar Year.	Tons.
1876.....	15,274	1881.....	39,843
1877.....	16,879	1882.....	42,135
1878.....	36,600	1883.....	52,410
1879.....	29,889	1884.....	54,885
1880.....	51,193	1885.....	48,129

The exports of iron ore from Canada, as compiled from Custom-Reports, are shown in tables 3 and 4 for the calendar and fiscal years respectively. Nearly all the iron ore exported goes to the United States. Table 4a, which has therefore been added to show the quantity of iron ores imported into the United States from Canada, has been compiled from 'The Foreign Commerce and Navigation of the United States' published at Washington.

A comparison of table 4 and 4a, shows large discrepancies for the years 1901 to 1905, inclusive. The Canadian figures of exports for these years are evidently much too high, and an investigation has shown that an error had crept into the Customs returns, owing to a duplication of certain entries.

TABLE 3.

IRON.

EXPORTS OF IRON ORE.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			
1893.....	2,419	7,590	1900.....	5,527	13,511
1894.....		21,294	1901*.....	306,199	762,283
1895.....	1,571	3,909	1902*.....	428,901	1,065,019
1896.....	1,033	1,911	1903*.....	368,233	922,571
1897.....	403	811	1904*.....	168,828	401,738
1898.....	182	278	1905*.....	168,289	407,881
1899.....	4,145	9,538			

*The export figures for these years are incorrect owing to a duplication of entries in Customs returns.

TABLE 4.

IRON.

EXPORTS OF IRON ORE.

Fiscal Year ending June 30.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1879.....	3,562	7,530	1893.....	7,811	26,114
1880.....	30,524	76,474	1894.....	1,859	9,026
1881.....	44,677	114,850	1895.....	2,315	5,743
1882.....	43,835	135,463	1896.....	14	35
1883.....	44,914	138,775	1897.....	1,320	2,492
1884.....	25,308	66,549	1898.....	260	402
1885.....	54,367	132,074	1899.....	1,849	4,968
1886.....	7,542	23,039	1900.....	4,327	7,689
1887.....	23,345	71,934	1901*.....	58,401	150,657
1888.....	13,544	39,945	1902*.....	525,983	1,303,901
1889.....	24,752	60,289	1903*.....	293,510	733,230
1890.....	13,811	31,376	1904*.....	233,850	579,883
1891.....	14,648	32,582	1905*.....	224,908	540,909
1892.....	7,707	36,935			

*See foot note to table 3.

SESSIONAL PAPER No. 26a

TABLE 4a.

IRON.

IMPORTS OF IRON ORE INTO THE UNITED STATES FROM CANADA.*

Year ending June 30.	Tons.	Year ending June 30.	Tons.
1893.....	6,880	1900.....	3,997
1894.....	269	1901.....	30,762
1895.....	2,394	1902.....	276,363
1896.....	35	1903.....	129,219
1897.....	2,263	1904.....	113,388
1898.....	1,172	1905.....	107,358
1899.....	2,308		

* Compiled from the "Foreign Commerce and Navigation of the United States."

Pig iron.—A very substantial growth has been made in the pig iron industry in Canada in recent years, though unfortunately a very large proportion of the iron ore used has been imported. The total quantity of the pig iron made in Canada in 1905, from both Canadian and imported ores was 523,306 tons, valued at the furnaces at \$6,475,186 or an average of \$12.33 per ton. The output in 1904 was 303,454 tons valued at \$3,687,985, or an average of \$12.15 per ton, so that an increase is shown in 1905 of 221,852 tons or over 73 per cent. Five years ago the production was about 100,000 tons, while ten years ago it was less than 50,000. Statistics of the production of pig iron, together with the iron ore, fuel and flux used, are given in table 5 for the years 1887 to 1905, inclusive. Previous to 1896 the pig iron manufactured was entirely from Canadian ore. Since that date, however, increasing quantities of imported ore have been used, which will be found separately stated in the table.

It is a matter of regret that an industry of such increasing importance, and to which so much assistance has been given, should be dependent, to such an extent, on imported raw material. A total of 978,821 tons of iron were charged to Canadian blast furnaces in 1905, and of this amount 861,847 tons, or 88 per cent, were imported chiefly from Newfoundland and the south shore of Lake Superior. The Canadian ore charged in 1905 amounted to only 116,974 tons compared with 180,932 tons in 1904, and 156,613 tons in 1901, while as long ago as 1893, 124,053 tons of Canadian ore were used and 60,432 tons in 1887. Considerable attention, however, is being paid at present to Canadian iron ore deposits, and it is quite possible that in the near future an increasing proportion of these ores will be used.

TABLE 5.
IRON.
PIG IRON PRODUCTION : CONSUMPTION OF ORE, FUEL, &c.

CALENDAR YEAR.	IRON ORE CONSUMED.		FUEL CONSUMED.				FLUX CONSUMED.		PIG IRON MADE.		
	Tons.	Value.	Charcoal.		Coke.		Tons.	Value.	Tons.	Value.	Value per ton.
			Bushels.	Value.	Tons.	Value.					
1887.....	60,434	\$130,808	940,400	\$48,593	30,248	\$89,123	3,333	\$5,877	24,827	\$366,192	\$14.75
1888.....	54,956	102,343	804,286	41,800	28,031	82,986	2,197	4,709	16,857	16,533	14.37
1889.....	65,670	126,064	755,800	41,568	33,289	94,791	3,044	6,525	21,799	313,235	19.28
1890.....	57,304	117,880	589,800	29,493	32,832	97,659	1,241	2,638	25,921	499,872	15.37
1891.....	60,935	130,955	441,812	22,091	30,626	98,402	2,170	2,868	21,772	331,688	15.23
1892.....	96,945	250,966	1,121,365	78,291	50,882	152,311	1,740	1,797	23,891	368,901	15.44
1893.....	124,053	296,979	1,302,720	90,976	58,711	163,849	6,621	13,539	22,967	21,687	15.02
1894.....	108,871	223,861	1,173,970	53,958	52,373	142,303	7,653	14,571	27,797	42,443	14.13
1895.....	93,208	218,336	789,561	31,582	48,540	139,475	3,089	5,396	35,101	55,947	12.94
1896.....	(a) 96,560	200,887	756,600	32,256	(a) 48,660	106,339	1,407	2,288	31,585	29,922	13.82
1897.....	(a) 46,300	100,205			(a) 33,990	103,253			37,462	36,140	13.74
1898.....	(a) 53,658	131,705	1,031,800	43,230	(a) 35,800	71,600			31,273	30,258	12.73
1899.....	(a) 57,881	151,700	836,400	41,820	(a) 27,810	94,553			33,913	31,153	11.85
1900.....	(a) 66,384	216,322	1,928,025	87,858	(a) 31,952	63,904			51,826	44,286	13.38
1901.....	(a) 71,341	184,191	1,799,737	82,408	(a) 44,844	134,532			52,966	39,332	15.55
1902.....	(a) 115,042	351,382	1,835,736	100,978	(a) 45,021	180,084			169,399	183,162	12.80
1903.....	(a) 156,613	544,144			(a) 59,345	255,892			274,376	3,512,923	11.85
1904.....	(a) 361,010	846,398			(a) 205,796	539,328	2,039	6,117	293,594	219,295	12.56
1905.....	(a) 125,664	429,753	2,146,623	118,275	(a) 115,367	497,386			277,452	249,251	12.15
	(a) 553,381	964,979			(a) 360,593	898,518		5,006	357,902	4,243,541	12.33
	(a) 82,035	247,229	2,322,030	152,717	(a) 112,314	494,433	1,615		297,885	3,742,710	
	(a) 485,911	823,147			(a) 350,190	819,016			303,454	3,687,985	
	(a) 180,332	489,687	3,477,470	191,404	(a) 96,540	556,091			525,306	6,475,186	
	(a) 454,671	922,594			(a) 257,182	729,585					
	(a) 116,974	351,965			(b) 136,210	551,445					
	(a) 861,847	1,802,539			(a) 365,897	962,518					
			4,404,394	222,156	(b) 243,882	1,233,515					

(a) Canadian. (b) Imported.

SESSIONAL PAPER No. 26a

In the tabulated statement showing the mineral production of Canada, the production from Canadian ore only is given. This has been arrived at by separating the total production at each furnace into two classes, viz.: pig iron from Canadian ore and pig iron from imported ore, the separation being made on the basis of the Canadian and imported ore entering into the production of pig iron at each respective furnace.

The production for the past ten years separated in this way has been as follows:—

Calendar Year.	Pig iron from Canadian ore.	Pig iron from Imported ore.
	Tons.	Tons.
1896	40,720	26,548
1897	26,200	31,807
1898	30,553	46,462
1899	34,244	68,699
1900	35,387	61,188
1901	83,100	191,276
1902	71,664	286,238
1903	42,052	255,833
1904	68,297	235,157
1905	68,170	457,136

During the year there were thirteen furnaces in blast for varying periods, operated by the following companies:—

Dominion Iron and Steel Company, Sydney, C.B.—Four completed furnaces of which three were operated during the year.

Nova Scotia Steel and Coal Company, New Glasgow, N.S.—One furnace at Sydney Mines, C.B.

Londonderry Iron and Mining Company, Ltd., Londonderry, N.S.—Furnace plant at Londonderry.

Canada Iron Furnace Co. Ltd., Montreal, Que.—Furnace plants at Radnor Forges, Que., and Midland, Ont.

John McDougall and Co., Montreal, Que.—Two small furnaces at Drummondville, Que.

Deseronto Iron Co., Ltd., Deseronto, Ont.—Furnace plant at Deseronto.

Hamilton Steel and Iron Co., Ltd.—Furnace near Hamilton, Ont.

The Algoma Steel Co., Ltd., (Lake Superior Corporation).—Two furnaces at Steelton, Ont., near Sault Ste. Marie.

Of fourteen completed furnaces on December 31st, 1905, nine were in blast and five were idle. The total capacity of the fourteen furnaces if in continuous operation, would be over 800,000 tons per annum.

The statistics of the production of pig iron and steel and of rolled iron and steel in Canada as well as in the United States, are admirably presented in the Annual Statistical Report of the American Iron and Steel Association, and the following information concerning the production of steel and rolled iron and steel in Canada, is taken from the above mentioned report for 1905 :—

‘The production of all kinds of steel ingots and castings in Canada in 1905, was much the largest in the history of the Dominion, and exceeded by 221,412 tons that of 1902, the year of next largest production, when 182,037 tons were made. As compared with 1904, the increase amounted to 254,665 tons, or over 171 per cent. Bessemer and open hearth steel ingots and castings were made in both 1904 and 1905, the production of Bessemer steel amounting to 164,488 tons in 1905, against 42,738 tons in 1904, and open hearth steel to 238,681 tons in 1905, against 106,046 tons in 1904. Almost all the open hearth steel reported in 1904 and 1905, was made by the basic process. The Bessemer steel was all made by the acid process. A few hundred tons of steel castings were made in 1905 by minor processes. All the steel castings made in 1905 by various processes amounted to 9,394 tons against 6,505 tons in 1904. Canada does not make crucible steel ingots or castings.

The following table gives the production of all kinds of steel ingots and castings in Canada from 1894 to 1905, in gross tons.

Years.	Gross Tons.
1894.....	25,685
1895.....	17,000
1896.....	16,000
1897.....	18,400
1898.....	21,540
1899.....	22,000
1900.....	23,577
1901.....	26,084
1902.....	182,037
1903.....	181,514
1904.....	148,784
1905.....	403,449

Production of Rolled Iron and Steel in Canada.

The production of finished rolled iron and steel in Canada in 1905 was also much larger than in any previous year and amounted to 385,826 tons, as compared with 180,038 tons in 1904, the year of next largest production, an increase of 205,788 tons, or over 114 per cent.

SESSIONAL PAPER No. 26a

The following tables gives the production of all kinds of finished rolled iron and steel in Canada from 1895 to 1905, in gross tons. Rolled forging blooms and forging billets are included for 1905.

Years.	Gross Tons.
1895.....	66,402
1896.....	75,043
1897.....	77,021
1898.....	90,303
1899.....	110,642
1900.....	100,690
1901.....	112,007
1902.....	161,485
1903.....	129,516
1904.....	180,038
1905.....	385,826

The production of Bessemer steel rails in 1905, amounted to 133,690 gross tons, as compared with 35,155 tons in 1904; open-hearth steel rails. 45,195 tons, against 1,061 tons in 1904; structural shapes 885 tons, against 447 tons in 1904; nail and spike plate 4,110 tons, against 5,030 tons in 1904; plates and sheets 4,944 tons, against 3,102 tons in 1904; all other finished rolled products, excluding muck and scrap bars, blooms, billets, sheet bars, and other unfinished forms, but including for 1905, 1,120 tons of forging blooms for billets 197,002 tons, against 135,243 tons in 1904; total 385,826 tons, against 180,038 tons in 1904. Of the 385,826 tons of finished iron and steel reported for 1905, about 318,405 tons were rolled from steel and 67,421 tons from iron, as compared with about 126,850 tons rolled from steel and about 53,188 tons rolled from iron in 1904.

In 1905 the rolling mills and steel works in Canada which operated cut nail or wire nail factories, produced 366,800 kegs of cut nails and wire nails of 100 pounds each, as compared with 324,000 kegs in 1904.

On December 31, 1905, there were 21 completed rolling mills and steel works in Canada. In addition 1 plant was being built and two plants were projected. Of the completed plants, 3 were equipped for the manufacture of steel castings only, one for the manufacture of open hearth steel ingots only, 5 for the manufacture of Bessemer or open hearth steel ingots and rolled products and 12 for the manufacture of rolled products only. The building plant was being equipped for the manufacture of black plates and tinplates and tern plates.

Of the 21 completed rolling mills and steel works in Canada on December 31, 1905, 4 were located in Nova Scotia, 5 in Quebec, 10 in Ontario, 1 in New Brunswick and 1 in Manitoba. The building plant and the two projected plants, are also in Ontario.

6-7 EDWARD VII., A. 1907

Bounties.—Bounties on iron and steel, made in Canada, were provided for by the Dominion government in 1897 (chapter 6, Statutes of Canada, 1897). This Act was amended in 1899 (chapter 8, Statutes of Canada, 1899), and again in 1903 (chapter 68, Statutes of Canada 1903).

The Act of 1903 also provides for the gradual extinguishment of the bounties authorized in 1897 as follows:—

Period.	On steel ingots, puddled iron bars, and pig iron from Canadian ore.	On pig iron from foreign ore.
	Per ton.	Per ton.
From July 1, 1903 to June 30, 1904.....	\$ 2 70	\$ 1 80
" 1904 to June 30, 1905.....	2 25	1 50
" 1905 to June 30, 1906.....	1 65	1 10
" 1906 to June 30, 1907.....	1 05	0 70

The payments by the Dominion government on account of iron and steel bounties during the fiscal year ending June 30, 1905, were as follows, the figures having been compiled from the Auditor General's Reports for 1905.

BOUNTIES PAID ON PIG IRON MANUFACTURED IN CANADA, FISCAL YEAR, 1904-5.

Company.	On Pig Iron from Canadian Ore.		On Pig Iron from Imported Ore.		Total Bounties.
	Tons.	Bounties.	Tons.	Bounties.	
		\$ cts		\$ cts.	\$ cts.
Algoma Steel Co., Ltd.	165·66	372 86	70,434·95	105,652 36	106,025 16
Canada Iron Furnace Co., Ltd. —					
Midland, Ont.	1,506·29	3,389 15	34,666·18	51,999 27	55,388 42
Radnor Forges, Que.	5,145·96	11,578 44	2,236·25	3,354 41	14,932 85
Deseronto Iron Co., Ltd.	571·00	1,284 75	10,371·00	15,556 50	16,841 25
Dominion Iron and Steel Co., Ltd.	216·45	487 01	131,878·81	197,818 22	198,305 23
Electric Reduction Co., Buckingham, Que.	176·51	397 15	.....	.....	397 15
Hamilton Steel and Iron Co., Ltd.	29,319·31	65,968 43	32,627·07	48,940 60	114,909 03
John McDougall & Co.	2,485·53	5,592 44	.....	.....	5,592 44
Londonderry Iron & Mining Co., Ltd.	19,864·77	44,695 72	.....	.....	44,695 72
Nova Scotia Steel and Coal Co., Ltd. ....	.....	.....	45,053·15	67,579 73	67,579 73
	59,451·48	133,765 89	327,267·41	490,901 09	624,666 98

SESSIONAL PAPER No. 26a

BOUNTY ON STEEL INGOTS AND PUDDLED IRON BARS, FISCAL YEAR, 1904-5.

Company.	Tons.	Bounty.
		\$ cts.
Algoma Steel Company, steel ingots	132,858·34	298,931 25
Dominion Iron and Steel Company, steel ingots	113,893·32	256,259 98
" " " steel ingots made		
during year 1903-4	825·71	2,229 42
Hamilton Steel and Iron Co., Ltd., steel ingots	26,981·90	60,709 26
" " " puddled iron bars ..	3,508·81	7,894 83
Nova Scotia Steel and Coal Co., Ltd., steel ingots	25,861·56	58,188 52
	303,929·64	684,213 26

BOUNTIES PAID ON ARTICLES MANUFACTURED FROM STEEL, FISCAL YEAR, 1904-5.

Company.	Tons.	Bounty.
		\$ cts.
Dominion Iron and Steel Co., Ltd., Sydney, C.B.—		
Rolled round steel wire rods at \$6	36,680·93	220,085 62
Hamilton Iron and Steel Co., Ltd.—		
Rolled angle bars at \$3	1,493·48	4,480 44
Montreal Rolling Mills Co.—		
Rolled round wire rods at \$6	213·35	1,280 10
Nova Scotia Steel and Coal Co., Ltd.—		
Rolled angles at \$3	1,740·92	5,222 77
Rolled plates, at \$3	84·77	254 31
	.....	231,323 24

The total amount of bounties on iron and steel, paid by the Dominion Government during the fiscal year, ending June 30th, 1905, was therefore as follows :

Bounties on pig iron	\$ 624,666 98
" " on steel ingots and	
puddled iron bars	684,213 26
" " on articles manufactured	
from steel	231,323 24
	<hr/>
	1,540,203 48

Total bounties paid to each company—Fiscal year ending June 30th, 1905.

Algoma Steel Co., Ltd.....	\$ 404,956 41
Canada Iron Furnace Co., Ltd.....	70,321 27
Deseronto Iron Co., Ltd.....	16,841 25
Dominion Iron and Steel Co., Ltd.....	676,880 25
Electric Reduction Co., Ltd.....	397 15
Hamilton Steel & Iron Co., Ltd.....	187,993 56
John McDougall & Co.....	5,592 44
Londonderry Iron & Mining Co., Ltd.....	44,695 72
Montreal Rolling Mills Co.....	1,280 10
Nova Scotia Steel & Coal Co., Ltd.....	131,245 33
Total.....	\$1,540,203 48

Table 6, illustrates the extent of the foreign trade of the country in regard to iron and steel products and machinery &c., made therefrom.

TABLE 6.

IRON.

EXPORTS OF IRON AND STEEL GOODS, THE PRODUCT OF CANADA.

Calendar Year 1905.	Quantity.	Value.
		\$
Stoves No.	986	11,637
Castings, N.E.S. \$		64,970
Pig iron..... Tons.	866	22,284
Machinery, N.E.S..... \$		393,170
Sewing machines..... No.	977	21,972
Typewriters..... "	4,100	138,941
Scrap iron and steel..... Cwt.	482,179	240,105
Hardware..... \$		170,262
Steel and manufactures of..... \$		224,217
Total.....		1,287,558

The Canadian consumption of iron and steel products, is illustrated in the following tables, Nos. 7, 8, 9, 10a, 10b and 11. The first three of these deal with the cruder forms of the metal the next two, with the manufactured articles wholly or largely composed of iron and steel, while the last table summarizes all the preceeding ones. They all cover the fiscal year ending June 30, 1905.

TABLE 7.

IRON.

IMPORTS OF IRON, PIG, SCRAP, &c.

Fiscal Year.	Pig Iron.		Charcoal Pig Iron.		Old and Scrap Iron.		Wrought Scrap and Scrap Steel.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1880	(a) 23,159	371,956			928	14,042		
1881	(a) 43,630	715,997			584	8,807		
1882	56,594	811,221	6,837	211,791	1,327	20,406		
1883	75,295	1,085,755	2,198	58,994	709	7,776		
1884	49,291	653,708	2,893	66,602	3,136	44,223		
1885	42,279	545,426	1,119	27,333	3,552	46,275		
1886	42,463	528,483	3,185	60,086	10,151	158,100		
1887	46,295	554,388	3,919	77,420	17,612	220,167	(b) 79	1,086
	Pig Iron, &c. (c)							
	Tons.	Value.						
		\$						
1888	48,973	648,012					23,293	297,496
1889	72,115	864,752					26,794	335,090
1890	87,613	1,148,078					47,846	678,574
1891	81,317	1,085,929					43,967	652,842
1892	68,918	886,485					32,627	433,695
	Pig Iron.		Charcoal Pig Iron.		Cast Scrap Iron.			
	Tons.	Value.	Tons.	Value.	Tons.	Value.		
		\$		\$		\$		
1893	56,849	682,209	5,944	84,358	729	9,317	45,459	574,809
1894	42,376	433,787	2,906	34,968	78	771	30,850	369,682
1895	31,637	341,259	2,780	31,171	643	4,347	23,390	244,388
1896	36,131	394,591	917	11,726	93	741	13,607	157,996
1897	25,766	291,788	2,936	35,373	238	1,362	7,903	93,541
1898	37,186	382,103	2,250	23,533	1,559	13,251	(e) 48,903	534,577
1899	44,261	452,911	1,955	19,123	2,378	22,594	(e) 28,352	301,268
1900	49,767	811,490	1,816	38,736	13,747	150,681	(e) 38,753	638,505
1901	35,293	548,033	490	7,121	4,499	51,032	(e) 24,773	242,189
1902	39,978	585,077	38	726	3,048	38,958	(e) 36,150	520,909
1903	91,730	1,338,574	(f) 882	16,352	7,137	94,028	(e) 43,115	670,402
1904	62,515	894,728			11,385	49,923	(e) 21,027	298,806
1905	(d) 71,005	857,879			(f) 6,533	75,521	(e) 15,479	210,900

(a) Comprises pig-iron of all kinds.

(b) From May 13 only.

(c) These figures appear in Customs reports under heading 'Iron in pigs, Iron kentledge and cast scrap-iron.'

(d) Duty \$2.50 per ton.

(e) Scrap iron and scrap steel, old, and fit only to be remanufactured, being part of, or recovered from, any vessel wrecked in waters subject to the jurisdiction of Canada. Duty free.

Iron or steel scrap, wrought, being waste or refuse, including punchings, cuttings and clippings of iron or steel plates or sheets, having been in actual use, crop ends of tin plate bars, blooms and rails, the same not having been in actual use. Duty \$1 per ton.

(f) Duty \$2.50 per ton.

TABLE 8.

IRON.

IMPORTS OF FERRO-MANGANESE, &c.

Fiscal Year.	Tons.	Value.
*1887	123	\$ 1,435
*1888	1,883	29,812
*1889	5,868	72,108
*1890	696	18,895
*1891	2,707	40,711
*1892	1,311	23,930
*1893	529	15,858
*1894	284	9,885
†1895	164	5,408
†1896	652	12,811
†1897	426	9,233
†1898	1,418	22,516
†1899	1,160	22,539
†1900	1,149	39,064
†1901	1,512	38,954
†1902	6,513	150,977
†1903	6,350	162,710
†1904	2,975	75,554
†1905.....(Duty, 5 p.c.)	12,935	246,815

*These amounts include:—Ferro-manganese, ferro-silicon, spiegel, steel bloom ends, and crop ends of steel rails, for the manufacture of iron or steel.

†Ferro-silicon, spiegeleisen and ferro-manganese.

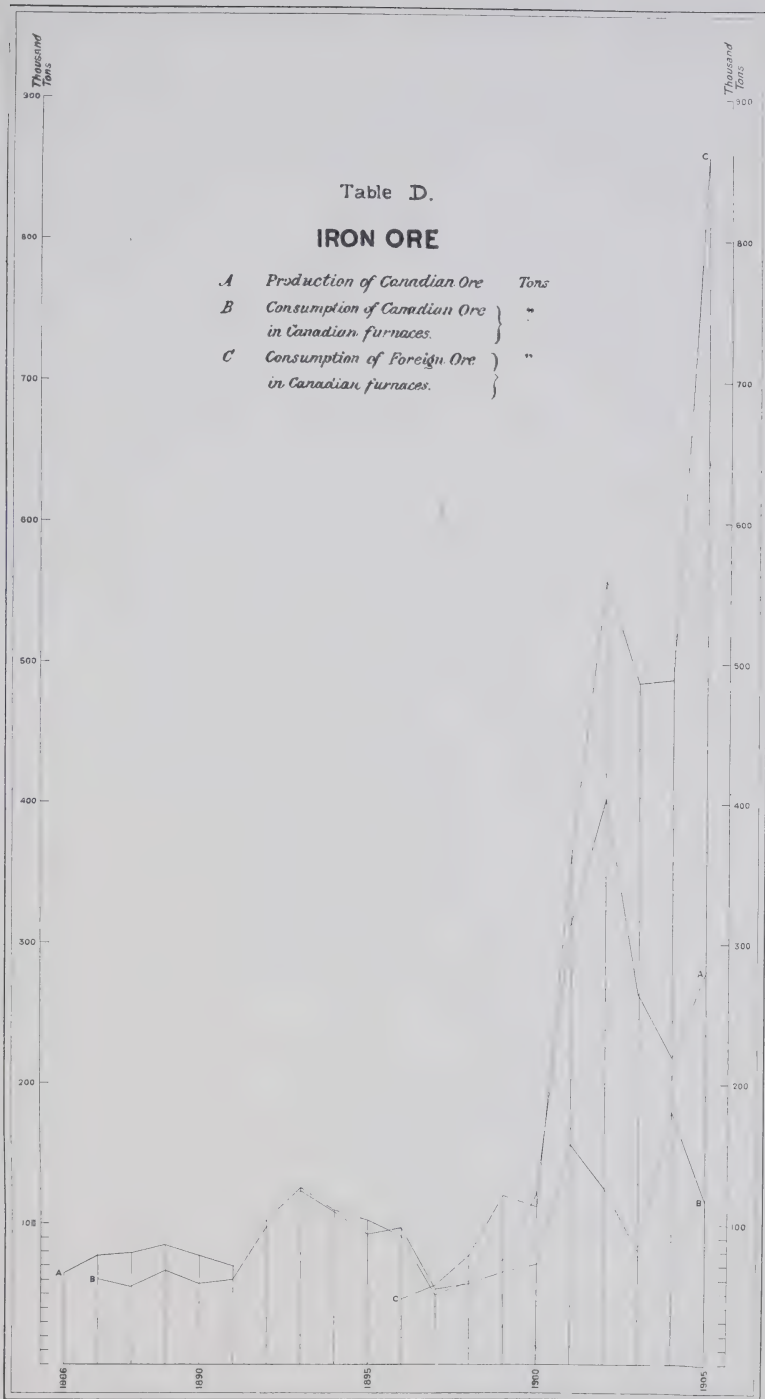
TABLE 9.

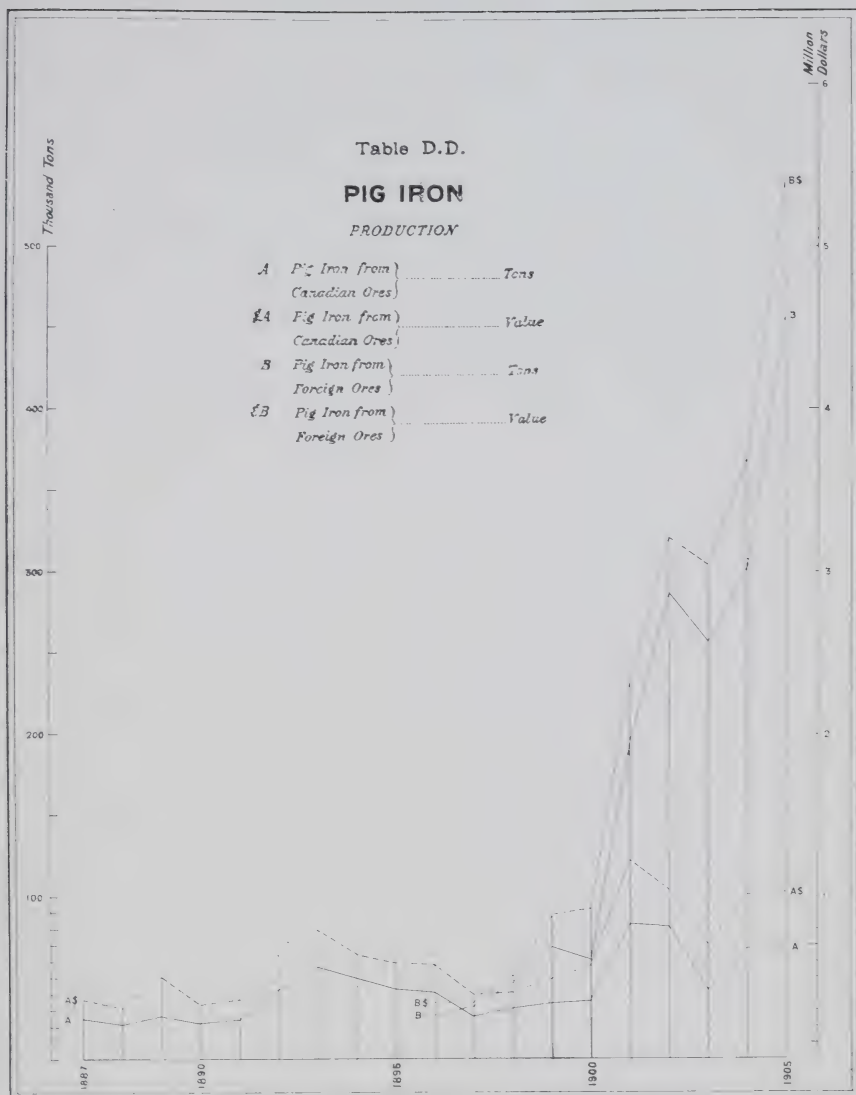
IRON.

IMPORTS: IRON IN SLABS, BLOOMS, LOOPS AND PUDDLED BARS, &c.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880	195,572	\$244,601	1892	64,397	\$ 56,186
1881	111,666	111,374	1893	65,269	58,533
1882	203,888	222,056	1894	50,891	45,018
1883	258,639	269,818	1895	78,639	67,321
1884	252,310	264,045	1896	128,535	110,757
1885	312,329	287,734	1897	56,560	48,954
1886	273,316	248,461	1898	162,891	122,426
1887	522,853	421,598	1899	124,311	103,198
1888	110,279	93,377	1900	255,145	362,463
1889	80,383	67,181	1901	234,925	206,975
1890	15,041	45,923	1902	401,306	419,543
1891	41,567	38,931	1903	394,418	380,034
			1904	200,295	216,571
			1905*	317,829	319,665

*Iron or steel ingots, cogged ingots, blooms, slabs, billets, puddled bars, and loops or other forms, N.O.P., less finished than iron or steel bars, but more advanced than pig-iron, except castings. Duty \$2 per ton.





SESSIONAL PAPER No. 26a

TABLE 10a.

IRON.

IMPORTS OF IRON AND STEEL GOODS.—1904-1905.

Fiscal Year, 1905.	Duty.	Quantity.	Value.
Bar iron or steel rolled, whether in coils, bundles, rods or bars, comprising rounds, ovals, squares and flats and rolled shapes, N.O.P.	Cwt. \$7 per ton.	587,140	\$ 875,067
Castings, iron or steel, in the rough, N.E.S.	\$ 25 %	.....	291,214
Canada plates, Russia iron, flat galvanized iron or steel sheets, terne plates and rolled sheets of iron or steel coated with zinc, spelter or other metal, of all widths or thicknesses, N.O.P.	Cwt. 5 "	322,187	684,586
Iron or steel bridges or parts thereof, iron or steel structural work, columns, shapes or sections drilled, punched, or in any further stage of manufacture than as rolled or cast, N.E.S.	" 35 "	275,022	719,284
Malleable iron castings and iron or steel castings, N.E.S.	" 25 "	4,461	15,170
Mould boards, or shares or plough plates land sides and other plates for agricultural implements, cut to shape from rolled plates of steel but not moulded, punched, or otherwise manufactured	" 5 "	60,911	175,155
Iron or steel railway bars or rails of any form, punched or not punched, N.E.S., for railways, which term for the purposes of this item shall include all kinds of railways, street railways and tranways, even although the same are used for private purposes only, and even although they are not used or intended to be used in connection with the business of common carrying of goods or passengers.	Tons. 30 "	17,904	421,084
Railway fish-plates and tie plates.	" \$8 per ton.	5,396	176,002
Rolled iron or steel angles, tees, beams, channels, joists, girders, zeos, stars or rolled shapes, or trough, bridge, building, or structural rolled sections, or shapes not punched, drilled or further manufactured than rolled, N.E.S., and flat eye-bar blanks not punched or drilled	Cwt. 10 %	997,880	1,380,841
Rolled iron or steel hoop, band, scroll or strip, 8 inches or less in width, No. 18 gauge and thicker, N.E.S.	" \$7 per ton.	63,922	98,889
Rolled iron or steel hoop, band, scroll or strip, thinner than No. 18 gauge, N.E.S.	" 5 %	39,265	81,645
Rolled iron or steel angles, tees, beams, channels, girders and other rolled shapes or sections, weighing less than 35 lbs. per lineal yard, not punched, drilled or further manufactured than rolled, N.O.P.	" \$7 per ton.	282,339	385,997
Rolled iron or steel plates or sheets, sheared or unsheared, and skelp iron or steel, sheared or rolled in grooves, N.E.S.	" \$7 "	185,467	287,239
Rolled iron or steel plates, not less than 30 inches in width and not less than $\frac{1}{4}$ inch in thickness, N.O.P.	" 10 %	416,246	640,776
Carried forward. ....		.....	6,232,949

TABLE 10a—Continued.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1905.	Duty.	Quantity.	Value.
			\$
Brought forward.....			6,232,949
Rolled iron or steel sheets No. 17 gauge and thinner, N.O.P..... Cwt.	5 p. c.	300,518	641,276
Rolls of chilled iron or steel..... "	30 "	5,459	17,619
Skelp iron or steel, sheared or rolled in grooves, imported by manufacturers of wrought iron or steel pipe for use only in the manufacture of wrought iron or steel pipe in their own factories..... "	5 "	659,801	864,631
Swedish rolled iron and Swedish rolled steel nail rods under half an inch in diameter for the manufacture of horse-shoe nails.. "	15 "	9,576	18,172
Switches, frogs, crossings and intersections for railways..... "	30 "	12,488	41,833
Steel—chrome steel..... "	15 "	2,770	13,543
Steel plate, universal mill or rolled edge bridge plates imported by manufacturers of bridges..... "	10 "	263,836	407,380
Steel in bars, bands, hoops, scroll or strips, sheets or plates, of any size, thickness or width when of greater value than 2½c. per lb., N.O.P..... "	5 "	132,227	684,725
Iron or steel beams, sheets, plates, angles, knees and cable chains for wooden, iron, steel, or composite ships or vessels..... "	Free.	60,484	102,728
Locomotive and car wheel tires of steel, in the rough..... "	"	63,780	128,639
Steel for saws and straw cutters cut to shape, but not further manufactured..... "	"	12,974	120,034
Crucible sheet steel, 11 to 16 gauge, 2½ to 18 inches wide, imported by manufacturers of mower and reaper knives for manufacture of such knives in their own factories..... "	"	5,851	29,958
Steel of No. 20 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of corset steels, clock springs and shoe shanks imported by the manufacturers of such articles for the exclusive use in the manufacture thereof in their own factories..... "	"	1,020	3,869
Steel valued at 2½ cents per lb. and upward, imported by the manufacturers of skates, for use exclusively in the manufacture thereof in their own factories..... "	"	2,365	9,335
Steel, under ½-inch in diameter, or under ½ inch square, imported by the manufacturers of cutlery, or of knobs, or of locks, for use exclusively in the manufacture of such articles in their own factories..... "	"	2,717	7,246
Carried forward.....			9,323,937

SESSIONAL PAPER No. 26a

TABLE 10a—*Concluded.*

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1905.	Duty.	Quantity.	Value.
Brought forward.....			9,323,937
Steel, No. 12 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of buckle clasps, bed fasts, furniture casters and ice creepers, imported by the manufacturers of such articles, for use exclusively in the manufacture thereof in their own factories..... Cwt.	Free.	2,825	7,988
Steel of No. 24 and 17 gauge, in sheets sixty-three inches long, and from 18 inches to 32 inches wide, imported by the manufacturers of tubular bow sockets for use in the manufacture of such articles in their own factories..... "	"	2,110	4,432
Steel for the manufacture of bicycle chains, imported by the manufacturers of bicycle chain for use in the manufacture thereof in their own factories..... "	"	526	1,720
Steel for the manufacture of files, augers auger bits, hammers, axes, hatchets, scythes, reaping hooks, hoes, hand rakes, hay or straw knives, windmills and agricultural or harvesting forks imported by the manufacturers of such or any of such articles for use exclusively in the manufacture thereof in their own factories.... "	"	90,319	173,482
Steel springs for the manufacture of surgical trusses imported by the manufacturers for use exclusively in the manufacture thereof in their own factories..... lbs.	"	1,710	1,114
Flat spring steel, steel billets and steel axle bars, imported by manufacturers of carriage springs and carriage axles for use exclusively in the manufacture of springs and axles for carriages or vehicles other than railway or tramway, in their own factories..... cwt.	"	86,590	121,638
Spiral spring steel for spiral springs for railways, imported by the manufacturers of railway springs for use exclusively in the manufacture of railway spiral springs in their own factories..... "	"	44,489	75,749
Steel for the manufacture of cutlery when imported by manufacturers of cutlery to be used in their own factories in the manufacture of such article, O.C..... "	"	678	1,560
Total.....			9,711,620

TABLE 10*b*.

IRON.

IMPORTS OF IRON AND-STEEL GOODS.

Fiscal Year, 1905.		Duty.	Quantity.	Value.
				\$
Agricultural implements, N.E.S., viz:				
Cultivators and weeders	No.	20 %	2,532	15,142
Drills, grain seeders,	"	20 "	3,446	121,777
Farm, road or field rollers,	"	25 "	24	481
Forks, pronged	"	25 "	8,354	5,527
Harrows	"	20 "	2,603	44,874
Harvesters, self binding	"	20 "	3,594	357,550
Hay loaders	"	25 "	492	15,094
Hay tedders	"	25 "	922	35,176
Hoes	"	25 "	3,115	808
Horse rakes	"	20 "	1,890	35,161
Knives, hay or straw	"	25 "	396	269
Lawn mowers	"	35 "	4,558	17,325
Manure spreaders	"	20 "	37	2,183
Mowing machines	"	20 "	2,212	71,375
Ploughs	"	20 "	10,384	258,829
Post hole diggers	"	25 "	1,228	1,120
Potato diggers	"	25 "	154	4,719
Rakes, N.E.S.	"	25 "	5,369	1,034
Reapers	"	20 "	402	18,113
Scythes	Doz.	25 "	4,288	21,377
Sickles or reaping hooks	"	25 "	648	422
Spades and shovels and spade and shovel blanks, and iron or steel cut to shape for the same	"	35 "	11,107	38,718
Parts of agricultural implements paying 20 p.c.	\$	20 "		490,876
All other agricultural implements, N.E.S.	"	25 "		35,351
Anvils and vises	"	30 "		47,056
Cart or wagon skeins or boxes	Lbs.	30 "	123,246	5,558
Springs, axles, axle bars, N. E. S., and axle blanks and parts thereof of iron or steel, for railway or tramway or other vehicles	Cwt.	35 "	21,966	63,080
Butts and hinges, N.E.S.	\$	30 "		60,269
Cast iron pipe of every description	Cwt.	\$8 per ton	260,894	393,684
Chains, coil chains, chain links and chain shackles of iron or steel 5-16 of an inch in diameter and over	"	5 %	48,255	148,285
Chain, malleable sprocket or link belt- ing, for binders	\$	20 "		26,229
Chains, N.E.S.	"	30 "		83,155
Tacks, shoe	Lbs.	35 "	28,777	2,531
Cut tacks, brad sprigs, or shoe nails, double pointed, and other tacks of iron and steel, N.O.P.	"	35 "	64,055	4,478
Engines, locomotives for railways, N.E.S.	No.	35 "	113	674,084
Fire engines	"	35 "	11	8,958
Fire extinguishing machines	"	35 "		46,805
Gasoline engines	"	25 "	929	194,074
Steam engines and boilers	"	25 "	1,107	437,432
Fittings, iron or steel, for iron and steel pipe	Lbs.	30 "	6,743,138	366,060
Carried forward				4,155,149

SESSIONAL PAPER No. 26a

TABLE 10b—Continued.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1905.	Duty.	Quantity.	Value.
			\$
Brought forward			4,155,149
Forgings of iron or steel, of whatever shape or size, or in whatever stage of manufacture, N.E.S., and steel shafting, turned, compressed or polished, and hammered iron or steel bars or shapes, N.O.P. Lbs.	30 %	3,857,689	150,422
Hardware, viz:			
Builders', cabinet-makers', upholsterers', harness-makers', saddlers' and carriage hardware, including currycombs and horse boots, N.E.S. \$	30 "		658,338
Horse, mule and ox shoes	30 "		11,616
Locks of all kinds	30 "		217,614
Machines and machinery, &c.:			
Automobiles	No.	390	453,904
Fanning mills	"	177	2,538
Grain crushers	"	11	452
Windmills	"	696	37,939
Ore crushers and rock crushers, stamp mills, cornish and belted rolls, rock drills, air compressors, cranes, derricks and percussion coal cutters	\$	25 "	135,076
Portable machines:			
Fodder or feed cutters	No.	32	1,298
Horse powers	"	44	5,656
Portable engines	"	396	420,543
Portable saw mills and planing mills	"	41	15,991
Threshers and separators	"	568	163,908
All other portable machines	"	744	37,162
Parts of portable machines	\$	25 "	165,771
Sewing machines and parts of	No.	11,330	259,974
Slot machines	"	1,583	25,224
Machines, type-writing	"	3,338	187,152
All other machinery composed wholly or in part of iron or steel, N.O.P. \$	25 "		4,467,397
Nails and spikes, composition and sheathing nails	Lbs.	15 "	2,481
Nails and spikes, wrought and pressed, trunk, clout, coopers, cigar box, Hungarian horseshoe and other nails, N.E.S.	"	30 "	25,544
Nails and spikes, cut, and railway spikes	"	6,546,874	115,513
Nails, wire of all kinds, N.O.P.	"	694,051	23,400
Pumps, N.E.S.	\$	25 %	207,290
Sad or smoothing, hatters' or tailors' irons, plated wholly or in part or not	"	25 "	9,022
Safes, doors for safes and vaults	"	30 "	99,077
Screws, iron and steel, commonly called 'woodscrews,' N.E.S. Lbs.	35 "	157,196	26,877
Scales, balances, weighing beams and strength testing machines	\$	30 "	94,255
Skates of all kinds and parts thereof	Pairs	35 "	49,579
Stoves of all kinds and parts thereof, N.E.S.	\$	25 "	410,672
Sheets, flat of galvanized iron or steel	Cwt.	5 "	925,900
Carried forward			13,564,734

TABLE 10b—Continued.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1905.		Duty.	Quantity.	Value.
				\$
Brought forward				13,564,734
Sheet iron or steel corrugated, galvanized..	Cwt.	25 "	4,210	8,713
Sheet iron or steel corrugated not galvanized	"	30 "	1,471	2,683
Tubing:				
Boiler tubes of wrought iron or steel, including flues and corrugated tubes for marine boilers	\$	5 %		408,814
Tubes of rolled steel, seamless, not joined or welded, not more than 1½ inches in diameter	"	10 "		2,551
Tubes, seamless steel, for bicycles	"	10 "		6,154
Tubing, wrought iron or steel, plain or galvanized, threaded and coupled or not, over 2 inches in diameter, N.E.S.	"	15 "		497,727
Tubing, wrought iron or steel, plain or galvanized, threaded and coupled or not, 2 inches or less in diameter, N.E.S.	"	35 "		90,861
Other iron or steel tubes or pipes, N.O.P.	"	30 "		145,686
Ware, galvanized sheet iron or of galvanized sheet steel, manufactures of, N.O.P.	"	25 "		26,255
Ware, agate, granite or enamelled iron or steel hollow ware	"	35 "		90,851
Ware, enamelled iron or steel ware, N.E.S., iron or steel hollow ware, plain black, tinned or coated, and nickel and aluminium kitchen or household hollow ware, N.E.S.	"	30 "		181,185
Wire bale ties Bundles of 250 ties		30 "	3,061	2,261
Wire cloth or wove wire and netting of iron or steel	Lbs.	30 "	1,001,572	45,809
Wire screens, doors and windows	\$	30 "		11,166
Wire fencing, woven, buckthorn strip and wire fencing of iron or steel, N.E.S.	Lbs.	15 "	1,276,757	41,564
Wire, single or several, covered with cotton, linen, silk, rubber or other material, &c., N.E.S.	"	30 "	2,509,696	354,272
Wire of all kinds, N.O.P.	"	20 "	8,962,380	214,599
Wire rope, stranded or twisted wire, clothes lines, picture or other twisted wire and wire cables, N.E.S.	"	25 "	2,002,691	148,236
Iron or steel nuts, washers, rivets and bolts with or without threads and nut bolt and hinge blanks, and T. and strap hinges of all kinds, N.E.S.	"	¾ c.p. lb. and 25 %	3,560,665	124,545
Pen-knives, jack-knives and pocket knives of all kinds	\$	30 %		174,560
Table cutlery, all kinds, N.O.P.	"	30 "		268,482
All other cutlery, N.E.S.	"	30 "		240,261
Guns, rifles, including air guns and air rifles, (not being toys) muskets, cannons, pistols, revolvers, or other firearms	"	30 "		457,706
Carried forward				17,109,675

TABLE 10b—Continued.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1905.	Duty.	Quantity.	Value.
			\$
Brought forward.....			17,109,675
Bayonets, swords, fencing foils and masks..	30 "		3,234
Needles of any material or kind, not otherwise provided ..	30 "		86,314
Tools and implements:			
Adzes, cleavers, hatchets, wedges, sledges, hammers, crow bars, cant dogs and track tools, picks, mattocks and eyes or poles for the same.....	\$ 30 %		62,218
Axes.....	Doz. 25 "	4,469	24,717
Saws.....	\$ 30 "		176,943
Files and rasps, N.E.S.	" 30 "		78,012
Tools, hand or machine, of all kinds, N.O.P	" 30 "		859,908
Knife blades, or blanks, and forks of iron or steel, in the rough not handled, filed, ground or otherwise manufactured..	" 10 "		67
Manufactures: articles or wares not specially enumerated or provided for, composed wholly or in part of iron or steel, and whether partly or wholly manufactured.	" 30 "		2,524,182
Anchors.....	Cwt. Free	3,605	13,736
Iron or steel, rolled round wire rods, in the coil not over $\frac{3}{8}$ -inch in diameter, imported by wire manufacturers for use in making wire in the coil in their own factories ..	" "	634,597	792,078
Iron or steel masts, or parts of ..	" "	18	60
Rolled iron tubes not welded, or joined, under $1\frac{1}{2}$ inch in diameter, angle iron 9 and 10 gauge, not over $1\frac{1}{2}$ inch wide, iron tubing lacquered or brass covered, not over $1\frac{1}{2}$ inch diameter, all of which are to be cut to lengths for the manufacture of bedsteads, and to be used for no other purpose, and brass trimmings for bedsteads imported for the manufacture of iron or brass bedsteads.....	" "		163,329
Steel bowls for cream separators and cream separators ..	\$ "		674,618
Cream separators: articles for the construction or manufacture of—when imported by manufacturers of cream separators to be used in their own factories for the manufacture of cream separators, O.C....	" "		58,859
Steel rails weighing not less than 45 lbs. per lineal yard for use only in the tracks of railways which are employed in the common carrying of goods and passengers, and are operated by steam motive power only.....	Cwt. "	4,249,816	5,051,762
Carried forward.....			27,679,712

TABLE 10b—*Concluded.*

IRON.

IMPORTS OF IRON¹ AND STEEL GOODS.

Fiscal Year, 1905.	Duty.	Quantity.	Value.
Brought forward			\$ 27,679,712
Steel wire, Bessemer soft drawn spring of Nos. 10, 12 and 13 gauge respectively, and homo steel spring wire of Nos. 11 and 12 gauge, respectively, imported by manufacturers of wire mattresses, to be used in their own factories in the manu- facture of such articles.	"		
Machinery and structural iron for beet root sugar factories.	Free.	4,584	11,146
Flat steel wire of No. 16 gauge or thinner imported by the manufacturers of cri- noline, corset wire and dress stays, for use in the manufacture of such articles in their own factories.	"		\$ 9,071
Wire, crucible cast steel	Cwt.	2,936	12,159
Galvanized iron or steel wire Nos. 9, 12 and 13 gauge.	Lbs.	2,113,355	94,523
Barbed fencing wire of iron and steel.	Cwt.	333,845	658,123
	"	411,579	892,367
Total			29,357,106

TABLE 11.

IRON.

IMPORTS OF PIG IRON, IRON AND STEEL GOODS, &C., FISCAL YEAR, 1904-1905.

Recapitulation of Tables, 7, 8, 9, 10a and 10b.

	Tons.	Value.
Pig iron	71,005	\$857,879
Pig iron, charcoal		
Scrap iron, cast.	6,533	75,521
Scrap steel, wrought.	15,479	210,900
Ferro-manganese, &c.	12,935	246,815
Iron in slabs, blooms, puddled bars, &c.	15,891	319,665
Iron and steel goods partially manufactured.		9,711,620
Iron and steel goods more highly manufactured*		29,357,106
Total		40,779,506

*Machinery, &c., classed under iron and steel goods in Customs report.

LEAD.

The production of lead in Canada has again increased, and shows a total output in 1905 of 56,864,915 pounds as compared with 37,531,244 pounds in 1904, an increase of 19,333,671 pounds or 51 per cent.

The average monthly price of refined lead on the New York market during 1905 was 4.707 cents, which is over 9 per cent higher than the average price in 1904, and is the highest average price received for lead, recorded in the tables which date back to 1887. This high level price, together with the bounty paid on the production of lead ores, have no doubt stimulated the production of the metal, although the output is not yet as great as was attained in 1900, when 63,169,821 pounds were produced without the assistance of any bounty, and when the price of lead was lower than during the past year.

The total amount paid in bounties during the Calendar year 1905, was \$334,224. The payment of bounty on lead in ore exported to Europe, ceased on June 30, 1905, and in the case of ore treated in Canada or exported to the United States, the rate of bounty was gradually diminished, owing to the rise in the price of lead (as per the terms of the bounty act), and all payments ceased in November, when the price of lead reached £16 per long ton.

Previous to 1904, lead ores mined in Canada, were either exported or were reduced in Canadian furnaces to lead bullion carrying gold, silver, etc. which product, was then exported for further treatment.

The Canadian Smelting Works at Trail, B.C. however, has had an electrolytic lead refinery in operation for two years producing pig lead, lead pipe, sheet lead, &c., of exceptional purity. The production of refined lead by this firm has been as follows :—

Year.	Refined lead produced.
1904.....	7,519,440 lbs.
1905.....	15,804,509 "

At the close of 1905, about 50 tons per day were being treated and lead is being supplied to the corroding works recently established by the Carter White Lead Company of Canada, Ltd., at Montreal. The latter plant is equipped with machinery for an immediate capacity of

7000 tons per annum, but is designed for an ultimate capacity of 15,000 tons, and will use Trail lead exclusively.

The whole of the output of lead in 1904 was derived from mines in British Columbia, with the exception of a small amount which was mined by the Ontario Mining and Smelting Company at the Hollandia mine, Bannockburn, Hastings county, Ont., and treated at the Stanley Smelting Works at Bannockburn.

TABLE 1.

LEAD.

ANNUAL PRODUCTION.

Calendar Year.	Pounds.	Price per Pound.	Value.
		cts.	
1887.....	204,800	4.50	\$ 9,216
1888.....	674,500	4.42	29,812
1889.....	165,100	3.93	6,488
1890.....	105,000	4.48	4,704
1891.....	88,665	4.35	3,857
1892.....	808,420	4.09	33,064
1893.....	2,135,023	3.73	79,636
1894.....	5,703,222	3.29	187,636
1895.....	16,461,794	3.23	531,716
1896.....	24,199,977	2.98	721,159
1897.....	39,018,219	3.58	1,396,853
1898.....	31,915,319	3.78	1,206,399
1899.....	21,862,436	4.47	977,250
1900.....	63,169,821	4.37	2,760,521
1901.....	51,900,958	4.334	2,249,387
1902.....	22,956,381	4.069	934,095
1903.....	13,139,283	4.237	768,562
1904.....	37,531,244	4.309	1,617,221
1905.....	56,864,915	4.707	2,676,632

SESSIONAL PAPER No. 26a

Exports of lead in ore, according to Customs returns were 7,284 tons to the United States and 20,175 to other countries, or a total export of lead of 20,852 tons, equivalent to a little over 78 per cent. of the total output.

Statistics of exports and imports are given in the following tables:

TABLE 2.

LEAD.

EXPORTS

Calendar Year.	Value.
1873	\$1,993
1874	127
1875	7,510
1876	66
1877	720
1878	
1879	230
1880	
1881	
1882	32
1883	5
1884	36
1885	
1886	
1887	724
1888	18
1889	
1890	
1891	5,000
1892	2,509
1893	3,099
1894	144,509
1895	435,071
1896	462,095
1897	925,144
1898	885,485
1899	466,950
1900	1,917,690
1901	1,804,687
1902	457,170
1903	426,466
1904	559,461
1905	1,046,541

GEOLOGICAL SURVEY OF CANADA

6-7 EDWARD VII., A. 1907

TABLE 3.

LEAD.

IMPORTS OF LEAD.

Fiscal Year.	OLD, SCRAP AND FIG.		BARS, BLOCKS, SHEETS.		TOTAL.	
	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.
1880					30,298	\$124,117
1881	16,236	\$ 56,919	18,222	\$70,744	34,458	127,663
1882	36,655	120,870	10,540	35,728	47,195	156,598
1883	48,780	148,759	8,591	28,785	57,371	177,544
1884	39,409	103,413	9,704	28,458	49,113	131,871
1885	36,106	87,038	9,362	24,396	45,468	111,434
1886	39,945	110,947	9,793	28,948	49,738	139,895
1887	61,160	173,477	14,153	41,746	75,313	215,223
1888	68,678	196,845	14,957	45,900	83,635	242,745
1889	74,223	213,132	14,173	43,482	88,396	256,614
1890	101,197	283,096	19,083	59,484	120,280	342,580
1891	86,382	243,033	15,646	48,220	102,028	291,253
1892	97,375	254,384	11,299	32,368	108,674	286,752
1893	94,485	215,521	12,403	32,286	106,888	247,807
1894	70,223	149,440	8,486	20,451	78,709	169,891
1895	67,261	139,290	6,739	16,315	74,000	155,605
1896	72,433	173,162	8,575	23,169	81,008	196,331
1897	65,279	158,381	10,516	29,175	75,795	187,556

	OLD, SCRAP, FIG AND BLOCK.*		BARS AND SHEETS.†		TOTAL.	
1898	88,420	\$260,779	22,214	\$39,041	110,634	\$299,820
1899	114,659	283,432	44,796	39,833	159,455	323,265
1900	62,361	207,819	15,493	53,506	77,854	251,325
1901	(a) 85,321	97,011	16,295	78,316	101,616	175,327
1902	(a) 122,279	104,672	18,596	49,261	140,875	153,933
1903	(a) 98,530	67,821	11,535	35,398	110,065	103,219
1904	(a) 94,602	121,165	14,102	39,644	108,704	160,809
1905	(a) 57,074	133,775	17,792	51,972	74,866	185,747

* Duty 15 p. c.

† Duty 25 p. c.

(a) Includes Canadian lead ore sent to the United States for refining, imported at price of refining only.

SESSIONAL PAPER No. 26a

TABLE 4.

LEAD.

IMPORTS OF LEAD MANUFACTURES.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.	\$15,400	1893.	\$ 33,783
1881.	22,629	1894.	29,361
1882.	17,282	1895.	38,015
1883.	25,556	1896.	50,722
1884.	31,361	1897.	60,735
1885.	36,340	1898.	63,179
1886.	33,078	1899.	91,497
1887.	19,140	1900.	104,736
1888.	18,816	1901.	107,260
1889.	16,315	1902.	120,020
1890.	25,600	1903.	134,151
1891.	23,893	1904.	129,093
1892.	22,636		

		Duty.	Cwt.	
1905 {	Lead Tea	Free.	17,648	\$ 71,369
	" Pipe	35 p. c.	1,649	7,273
	" Shot and bullets	35 "	1,241	4,512
	" Manufactures, N.E.S.	30 "		64,023
Total				\$147,177

TABLE 5.

LEAD.

IMPORTS OF LITHARGE.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.	3,041	\$14,334	1893.	7,685	\$24,401
1881.	6,126	22,129	1894.	38,547	28,685
1882.	4,900	16,651	1895.	11,955	32,953
1883.	1,532	6,173	1896.	10,710	32,817
1884.	5,235	18,132	1897.	12,028	34,538
1885.	4,990	16,156	1898.	11,446	32,904
1886.	4,928	16,003	1899.	9,530	32,518
1887.	6,397	21,865	1900.	9,139	29,176
1888.	7,010	23,808	1901.	11,132	51,944
1889.	8,089	31,082	1902.	13,002	47,021
1890.	9,453	31,401	1903.	13,921	47,761
1891.	7,979	27,613	1904.	9,894	32,633
1892.	10,384	34,343	1905. Duty free	17,865	57,736

In July, 1905, the duty on dry white lead was increased from 5 per cent to 30 per cent, and on white lead ground in oil to 35 per cent. while the duty on red lead, orange mineral and zinc white remained at 5 per cent.

Statistics of the imports of white lead, etc., are given in table 6 following.

TABLE 6.

LEAD.

IMPORTS OF DRY WHITE AND RED LEAD AND ORANGE MINERAL.

Fiscal Year.		Pounds.	Value.
			\$
a	1885.....	5,404,753	198,913
	1886.....	6,703,077	213,258
	1887.....	6,998,820	233,725
	1888.....	6,361,334	216,654
	1889.....	7,066,465	267,236
b	1890.....	10,859,672	381,959
	1891.....	8,560,615	337,407
	1892.....	10,288,766	351,686
	1893.....	10,865,183	364,680
	1894.....	10,958,170	353,053
	1895.....	8,780,052	282,353
	1896.....	11,711,496	367,569
	1897.....	10,310,463	347,539
	1898.....	12,682,808	448,659
	1899.....	14,507,945	514,842
	1900.....	14,679,920	634,492
	1901.....	10,241,601	461,368
	1902.....	15,584,164	603,582
	1903.....	19,208,786	758,371
	1904.....	16,925,585	662,098
(c) 1905 Duty, 5 p.c.		17,376,588	638,381

(a) Imports of dry white and red lead and orange mineral.

(b) Imports of dry white and red lead, orange mineral and zinc white.

(c) Imports of dry white and red lead.

Statistics of lead production in British Columbia, comprising the greater part of the output in Canada are given separately in table 7, while the details by districts for the past four years are given in table 8. The increase in output over the previous year is over 54 per cent

SESSIONAL PAPER No. 26a

and with the exception of the production attained in 1900, the output is the largest ever mined in British Columbia. The Slocan has fallen away behind in relative importance as a lead producing district, over 86 per cent of the output having been obtained in Fort Steele division and less than 10 per cent in the Slocan.

TABLE 7.

LEAD.

BRITISH COLUMBIA : PRODUCTION.

Calendar Year.	Pounds.	Price per Pound.	Value.
		cts.	
1887.....	204,800	4 50	\$ 9,216
1888.....	674,500	4 42	29,813
1889.....	165,100	3 93	6,488
1890.....	Nil.		
1891.....			
1892.....	808,420	4 09	33,064
1893.....	2,131,092	3 73	79,490
1894.....	5,703,222	3 29	187,636
1895.....	16,461,794	3 23	531,716
1896.....	24,199,977	2 98	721,159
1897.....	38,841,135	3 58	1,390,513
1898.....	31,693,559	3 78	1,198,017
1899.....	21,862,436	4 47	977,250
1900.....	63,158,621	4 37	2,760,031
1901.....	51,582,906	4 334	2,235,603
1902.....	22,536,381	4 069	917,005
1903.....	18,089,283	4 237	766,443
1904.....	36,646,244	4 309	1,579,086
1905.....	56,580,703	4 707	2,663,254

TABLE 8.

LEAD.

BRITISH COLUMBIA : PRODUCTION BY DISTRICTS.

	1902.	1903.	1904.	1905.
	Pounds.	Pounds.	Pounds.	Pounds.
Cassiar.....				5,500
East Kootenay—				
Fort Steele.....	3,017,756	717,479	21,071,236	48,248,828
Other districts.....	204,652	951,296	401,022	149,584
West Kootenay—				
Ainsworth.....	3,083,039	4,299,727	3,091,648	1,002,114
Nelson.....	1,680,948	1,072,542	976,570	1,368,388
Slocan.....	13,651,144	9,880,469	10,611,227	5,399,330
Other districts.....	885,734	1,144,239	485,520	339,883
Yale.....	13,108	23,531	9,021	67,076
	22,536,381	18,089,283	36,646,244	56,580,703

The Provincial Mineralogist remarks—"In the Fort Steele Mining division of East Kootenay the St. Eugene mine has this year more than doubled its output of the previous year, despite the fact that several months were lost at the most important opening through the head works being completely destroyed by fire. The property is a large low grade concentrating proposition, galena, low in silver in a siliceous gangue. This years output was nearly 150,000 tons of ore, producing about 900,000 ounces of silver and 36,500,000 lbs. of lead, the largest lead production of any property in British Columbia, and about 65 per cent of the total production of the Province. The North Star, which has been for many years one of the largest and steadiest producers of silver-lead ore, has been worked out and practically abandoned, as development on an extensive scale, failed to disclose further ore bodies, and the small shipments made this year are only the results of the clearing out of the workings.

"With the passing of the North Star, an adjacent property, the Sullivan, has taken its place, and is today the second largest lead producer in the Province, producing nearly 11,500,000 lbs of lead or 20 per cent of the production of the Province."

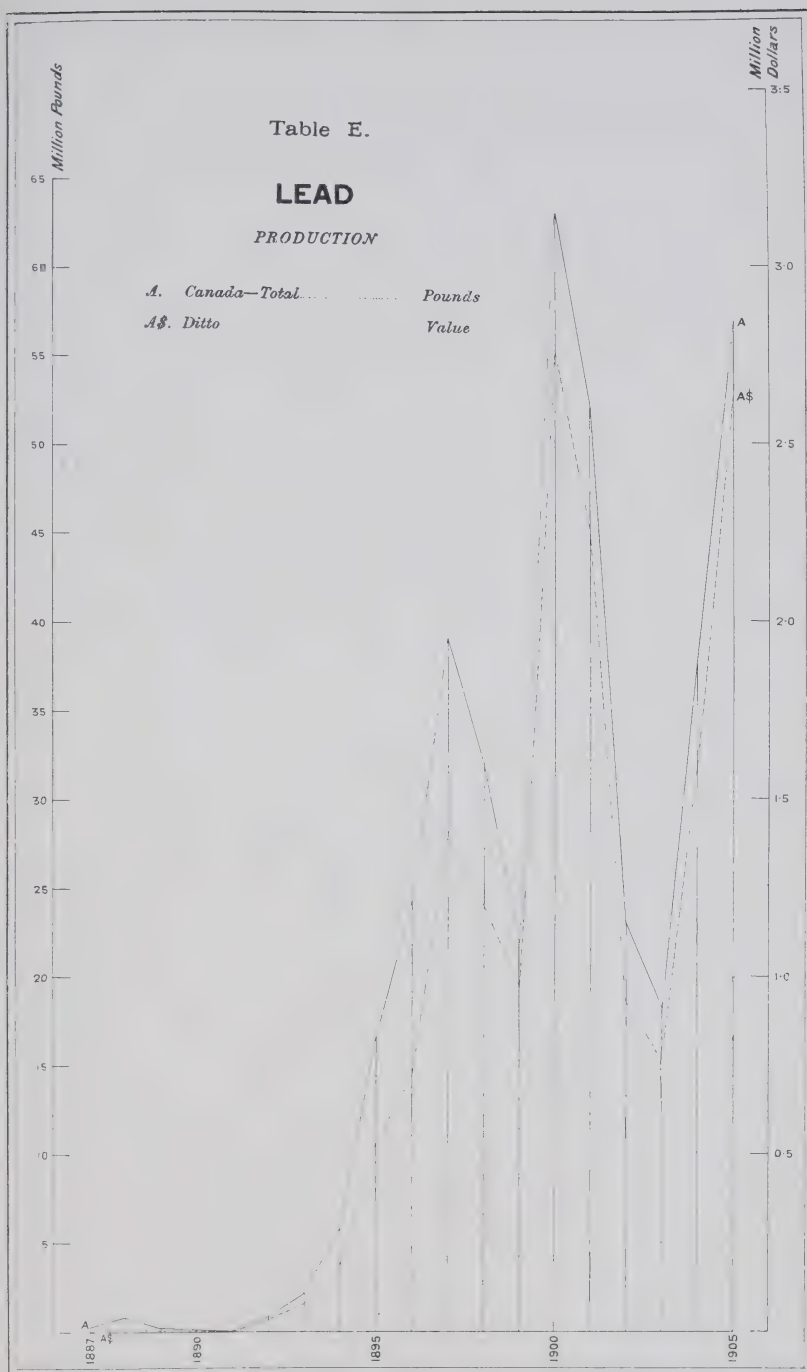
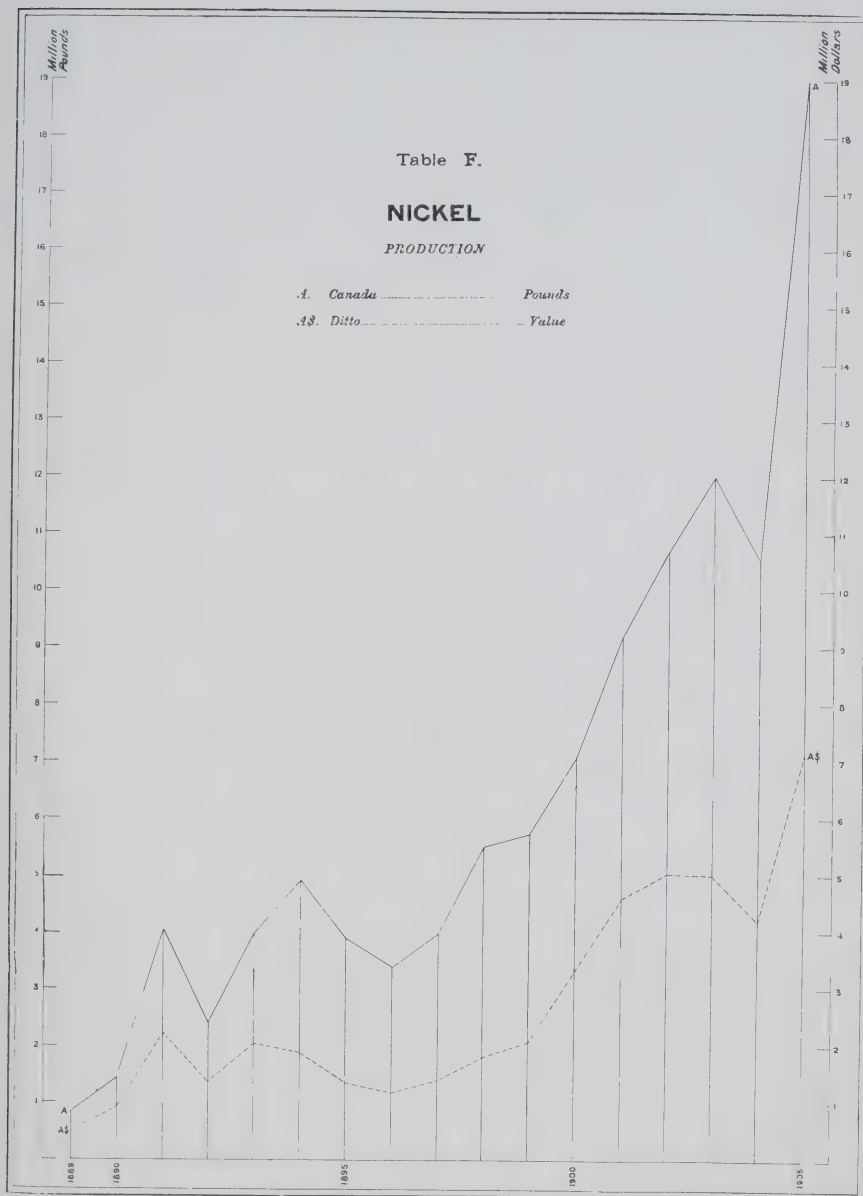


Table F.

NICKEL

PRODUCTION

A. Canada Pounds
 B. Ditto Value



NICKEL.

The production of nickel (contents of matte shipped) from the copper-nickel ores of the Sudbury district of Ontario, reached a total of 18,876,315 lbs. in 1905, the largest output ever reached in the district, being over twice the production of 1901 and an increase of 8,328,432 lbs. or nearly 79 per cent. over 1904.

The value of the output in 1905 at the average price of refined nickel in New York, 40 cents per pound, was \$7,550,526. The companies employed in mining nickel ores were as follows:—

The Canadian Copper Company (The International Nickel Co.) Copper Cliff, Ont. and New York.

The Mond Nickel Company, Victoria Mines, Ont. and London, England.

The Lake Superior Power Company (The Lake Superior Corporation) Sault Ste. Marie, Ont.

The first two only were operating smelting plants during the year.

Details of the production of ore, matte, etc., in 1905 were as follows:

	Tons of 2,000 lbs.
Ore mined.....	277,766 tons.
Ore smelted.....	251,421 "
Matte produced.....	17,388 "
Matte shipped.....	17,405 "
Matte in stock at end of year.....	2,675 "
Copper contents of matte shipped.....	4,386 "
Nickel.....	9,438 "
Value of matte shipped.....	\$4,019,814.

According to Customs returns, exports of nickel in matte, etc., were for the twelve months ending Dec. 31, as follows:

To Great Britain.....	1,281,594 lbs.
To United States.....	16,036,465 "
Total.....	17,318,059 "

The price of refined nickel remained fairly steady throughout the year; according to the 'Engineering and Mining Journal' of New York, quotations for large lots, New York or other parallel delivery, were 40 to 47 cents per pound, according to size and condition of order. For small quantities prices ranged from 48 to 60 cents, also according to size for order and delivery.

Some of the ores from the now famous Cobalt district contain from 4 to 7 per cent. of nickel in addition to the cobalt, silver and arsenic, but no statistics of production of nickel from this district have been available for inclusion in the table of production.

TABLE 1.

NICKEL.

ANNUAL PRODUCTION.

Calendar Year.	Pounds of Nickel in Matte.	Final Average Market Price per lb. at New York.	Value.
1889.....	*830,477	60c.	\$ 498,286
1890.....	1,435,742	65c.	933,232
1891.....	4,035,347	60c.	2,421,208
1892.....	2,413,717	58c.	1,399,956
1893.....	3,982,982	52c.	2,071,151
1894.....	4,907,430	38½c.	1,870,958
1895.....	3,888,525	35c.	1,360,984
1896.....	3,397,113	35c.	1,188,990
1897.....	3,997,647	35c.	1,399,176
1898.....	5,517,690	33c.	1,820,838
1899.....	5,744,000	36c.	2,067,840
1900.....	7,080,227	47c.	3,327,707
1901.....	9,189,047	50c.	4,594,523
1902.....	10,693,410	47c.	5,025,903
1903.....	12,505,510	40c.	5,002,204
1904.....	10,547,883	40c.	4,219,153
1905.....	18,876,315	40c.	7,550,526

* Calculated from shipments made by rail.

TABLE 2.

NICKEL.

EXPORTS.*

Calendar Year.	Value.	Calendar Year.	Value.
1890.....	\$ 89,568	1898.....	\$ 1,019,363
1891.....	667,280	1899.....	939,915
1892.....	293,149	1900.....	1,031,030
1893.....	629,692	1901.....	751,080
1894.....	559,356	1902.....	1,007,211
1895.....	521,783	1903.....	1,116,099
1896.....	658,213	1904.....	1,091,349
1897.....	723,130	1905.....	1,569,693

*Practically all the nickel-bearing ore and matte produced in Canada is exported, the apparent discrepancy between Tables Nos. 1 and 2 being due to the different basis of valuation adopted in the two instances. Table 1 represents the total final values of the nickel produced in Canada, for the years represented. In Table 2 the worth of the product shipped is entered at its spot value to the operators, and depends upon the particular stage to which they happen to carry the process of extraction at the time, *e.g.*, whether the shipments made are raw ore, low grade matte or high grade matte, &c.

SESSIONAL PAPER No. 26a

TABLE 3.

NICKEL.

IMPORTS.

Calendar Year.		Value.
1890		\$ 3,154
1891		3,889
1892		3,208
1893		2,905
1894		3,528
1895		4,267
1896		4,787
1897		4,787
1898		5,882
1899		9,449
1900		6,988
1901		12,029
1902		15,448
1903		26,177
1904		14,682
1905 {	Nickel anodes.....	10 p. c. 15,351
	Nickel*	Free. 3,725
		\$ 19,076

* Classified under the general heading of minerals in the Trade and Navigation Report.

ZINC.

The zinc smelting plant being erected at Frank, Alberta, by the Canadian Metal Company, Limited, was not yet completed at the close of 1905 consequently there was not any production of spelter to report in Canada.

The total shipments of zinc ore, concentrates, etc., during the year were 9,413 tons, valued at \$139,200, derived altogether from mines in British Columbia. No returns have been received of any production in Ontario.

TABLE 1.
ZINC.
ANNUAL PRODUCTION OF ZINC.

Calendar Year.	Zinc Ore Shipped		Metallic Zinc in Ore Shipped.	
	Tons.	Spot Value	Pounds.	Final Value.
1898.....	1,162	\$ 11,000	788,000	\$ 36,011
1899.....	865	18,165	814,000	46,805
1900.....	261	4,810	212,000	9,342
1901.....				
1902.....	158	1,659	142,200	6,882
1903.....	1,000	10,500	900,000	48,660
1904.....	597	3,700	477,568	24,356
1905.....	9,413	139,200	*	*

*Figures not available.

TABLE 2.
ZINC.
IMPORTS OF ZINC IN BLOCKS, PIGS AND SHEETS.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	13,805	\$67,881	1893.....	26,446	124,360
1881.....	20,920	94,015	1894.....	20,774	90,680
1882.....	15,021	76,631	1895.....	15,061	63,373
1883.....	22,765	94,799	1896.....	20,223	80,784
1884.....	18,945	77,373	1897.....	11,946	57,754
1885.....	20,954	70,598	1898.....	35,148	112,785
1886.....	23,146	85,599	1899.....	18,785	107,477
1887.....	26,142	98,557	1900.....	28,748	156,167
1888.....	16,407	65,827	1901.....	20,527	103,457
1889.....	19,782	83,935	1902.....	34,871	141,560
1890.....	18,236	92,530	1903.....	26,646	142,827
1891.....	17,984	105,023	1904.....	25,553	138,067
1892.....	21,881	\$127,302	1905Duty free	25,141	141,514

SESSIONAL PAPER No. 203

TABLE 3.
ZINC.
IMPORTS OF SPELTER.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	1,073	\$ 5,310	1893.....	10,721	\$49,822
1881.....	2,904	12,276	1894.....	8,423	35,615
1882.....	1,654	7,779	1895.....	9,249	30,245
1883.....	1,274	5,196	1896.....	10,897	40,548
1884.....	2,239	10,417	1897.....	8,342	32,826
1885.....	3,325	10,875	1898.....	2,794	13,561
1886.....	5,432	18,238	1899.....	5,450	29,687
1887.....	6,908	25,007	1900.....	5,836	29,416
1888.....	7,772	29,762	1901.....	14,621	58,283
1889.....	8,750	37,403	1902.....	18,356	80,757
1890.....	14,570	71,122	1903.....	23,159	110,817
1891.....	6,249	31,459	1904.....	33,952	164,751
1892.....	13,909	62,550	1905Duty free	37,941	206,244

*Spelter in blocks and pigs.

TABLE 4.
ZINC.
IMPORTS OF ZINC, MANUFACTURES OF.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$ 8,327	1893.....	\$ 7,464
1881.....	20,178	1894.....	6,193
1882.....	15,526	1895.....	5,581
1883.....	22,599	1896.....	6,290
1884.....	11,952	1897.....	5,145
1885.....	9,459	1898.....	10,503
1886.....	7,345	1899.....	14,661
1887.....	6,561	1900.....	11,475
1888.....	7,402	1901.....	6,882
1889.....	7,233	1902.....	6,683
1890.....	6,472	1903.....	9,754
1891.....	7,178	1904.....	12,682
1892.....	7,563		
1905 { Zinc seamless drawn tubing.....		Duty.	
" manufactures of, N.O.P.....		Free.	
		25 %	\$ 11,912
Total.....			11,912

This is the first record of shipments of zinc ore from British Columbia. The shipments of zinc ore previous to 1905, shown in table 1, were derived from mines in Eastern Canada, spasmodically operated, chiefly the Calumet mines on Calumet island, Pontiac county, Quebec; the Zenith mine near Rossport Station, Canadian

Pacific Railway, Thunder Bay district, Ont., and the Richardson mine, Frontenac county, Ont.

The following notes on zinc ore mining in British Columbia have been taken from the report of the Minister of Mines for the Province for 1905:—

“This year, for the first time, have any important sales of zinc ore to be recorded. Plants for the ‘enrichment’ of zinc ores have been started at Kaslo, Roseberry and Pilot bay. These plants are merely concentrators, in which ores, or ordinary zinc concentrates, are more carefully separated, with the elimination of minerals undesirable in the smelting of zinc ores, such as iron pyrites or carbonate, galena and gangue matter.

“The resulting ‘enriched’ zinc concentrates, thus rendered saleable, have found a ready market, at prices varying according to the zinc contents and freedom from impurities, from about \$25 a ton for 53 per cent. zinc in a pure ore, to about \$10 a ton for a 40 per cent. zinc ore not so free from impurities.

“Approximately 9,413 tons of zinc ore or zinc concentrates were sold this past year, having a value at point of shipment of about \$139,200.

“Almost all of this zinc ore comes from the Slocan district, but has not been all mined this past year, as the sales include zinc concentrates which have accumulated and for which only this year has a market been found:

“As yet, most of the zinc ore sold has gone to the United States, but a zinc smelting plant having this year been erected at Frank, in Alberta, just east of the British Columbia boundary, in all probability the larger part of the British Columbia output will in future be treated there.*

“A commission appointed by the Dominion Government, and including Mr. W. R. Ingalls, of New York, and Mr. Philip Argall, of Colorado, spent the season of 1905 in investigating the possibilities of zinc ore mining in British Columbia and methods of treating the ore. The report of this commission has not as yet been published.†

“Practical demonstrations of smelting zinc-lead ores by electricity were, upon two occasions, attempted at Vancouver, to witness which the Provincial Government was invited to send a representative. Mr. Carmichael, the Provincial Assayer, who was present, reports that the demonstrations did not succeed, for reasons which, he hopes, may yet be overcome.

* This plant was completed in June, 1906, and spelter first turned out during that month. Notes by Mr. Theo. Denis on the equipment at this plant will be found at the end of this article.

† The report of this commission was issued 1906.

SESSIONAL PAPER No. 26a

"Of the undeveloped properties carrying strictly zinc ores those on Pingston creek, in the Arrow lake mining division, present the greatest surface showing"

Zinc Smelter at Frank, Alberta.

The Canadian Metal Company, Ltd., a syndicate composed mainly of French capitalists, has erected at Frank, Alberta, a large zinc smelting plant where it is intended to treat all these ores which were previously sent to United States smelters. The new plant will produce spelter, and it is also the intention to make provision to save the silver contents of the zinc ores.

The Canadian Metal Company has also purchased several zinc properties in the Slocan district, and intends to start work on them immediately. They have acquired the Pilot Bay smelter, which they will transform into a concentrating and enriching plant. Moreover, they own coal lands at Frank, and they are at present developing a coal mine within a few hundred feet of the smelter.

The smelter is situated at Frank, Alberta, on the Crows nest line of the Canadian Pacific Railway, within twelve miles of the boundary between Alberta and British Columbia. This location was decided upon on account of its being a coal producing centre.

The ores treated are the British Columbia zinc ores, both crude and concentrated. The smelter is capable of treating 60 tons of ore per day, and provision has been made for an increase to a capacity of 120 tons.

The following are average analyses of the ores treated at the smelter:—

Zinc ore, Slocan district—Lead, 3 per cent; zinc, 48 per cent; iron, 7 per cent; silica, 8 per cent; lime, traces; silver, 10 oz. per ton.

Roasted ore—Lead, 3.2; zinc, 42.9 per cent; iron, 6.5 per cent; lime, 7.0; sulphur, (due to lime) 3.9.

The process adopted in the smelter is simple. The zinc ores are crushed and sampled and stored in bins. The smelting process comprises a roasting in furnaces, which converts the zinc sulphide into zinc oxide. This is mixed with the proper proportion of a reducing agent, which is here coal dust; this mixture is distilled, the metallic zinc resulting cast into plates, and the residue from the distillation saved and treated for silver contents.

The crushing and sampling plant comprises:

One Allis-Chalmers vertical crusher.

Steel crushing rolls, 26 in. x 20 in.

Automatic sampler.

Bucket elevators.

Shaking screens (Jeffrey).

Screw and belt conveyors.

The ore, after being weighed, is dumped into the vertical crusher. The crushed product is raised to the shaking screen (10 mesh) where it is separated into coarse and fine. The coarse, which goes over 10 mesh, is sent to the rolls by means of a screw conveyor, and screened again. This cycle is repeated until all the ore goes through the screen. The screened ore is conveyed to the automatic sampler, whence a bucket elevator and a chain conveyor with steel disks, distribute it into the ore bins, which have a capacity of 900 tons. These are discharged from below, into cars which convey the ore to the roasting furnaces. It is dumped into the pit of a bucket elevator, which raises it, and it is then distributed to the roasting furnaces by a screw conveyor. The roasting is done in Merton furnaces equipped with mechanical rakes and water jacketed. They consist of five chambers, or shelves, placed one above the other, and of a hearth twelve feet in diameter where the process is completed. The fuel used is producer gas. The ore moves in a direction opposite to the flow of gas. These furnaces are entirely new as applied to the zinc industry and were constructed by the Union Iron Works of San Francisco. There are four of them, and space for increasing the number to eight.

The mixing of roasted ore and coal dust (reducing agent) is done in two pug-mills.

The ore from the roasting furnaces is first allowed to cool on a cooling floor, then dumped into the pug-mills with the right proportion of coal dust. The mixture is then raised by a bucket elevator, loaded on cars, and sent to the distillation furnaces. These are arranged into five groups of 240 retorts each, in four horizontal tiers, gas firing, with regenerator for air only. The current of gas is reversed every half hour.

The gas plant comprises 4 producers of a diameter of 9 ft. 6 in. and two of 8 ft., Taylor system, water gas, with hydraulic joints. The coal, which is obtained from the Canadian Metal Company's own mine, is stored in the gas producer building. The pottery comprises a pug-mill, crusher for fire-clay; a Mahler hydraulic press for muffles, &c.; stamp mill for clay. All the refractory bricks used in the smelter were made in the pottery. The clay has to be imported from St. Louis, Missouri, as no satisfactory clay has yet been found near at hand.

There are three engines in various parts of the smelter, two of 35 h.p. and one of 60 h.p.

There are also well equipped machine and carpenter shops, laboratories, offices, &c.

MISCELLANEOUS METALLIC.

ALUMINIUM.

The Northern Aluminium Company have extensive works at Shawenegan Falls, Que., where they manufacture aluminium from ores imported from France and Germany. They have also a well equipped wire mill where the metal is made into aluminium wire and cables which are now used extensively in transmission of electricity. No Canadian raw material is used, but it is interesting to mention the industry inasmuch that it may stimulate search and prospecting for ores of aluminium. The Northern Aluminium Company use bauxite imported from France and Germany.

ANTIMONY.

The mining of antimony ores in Canada has been exceedingly irregular, as, previous to 1905, no production has been reported since 1898. In 1905 the auriferous antimony ores at West Gore, Hants county, Nova Scotia, were actively worked, about 20 men being employed. Not only was a considerable tonnage of ore mined but a good deal of experimenting was done during the year, in order to more fully recover the gold values and concentrate the antimony to save heavy freight rates now paid.

A description of the development of the mines and of different methods of treating the ore will be found in the report of the Department of Mines of Nova Scotia for 1905 pages 69 to 108.

According to the same report, there were mined about 4,000 tons of ore divided into two classes as follows:—

430 tons said to contain 46 per cent antimony and 5.56 ounces of gold per ton.

3,570 tons, said to contain 8 per cent antimony and \$10 in gold per ton.

There were shipped to english smelter companies 527 tons of mined ore containing gold valued at \$24,657. (Antimony contents not stated.)

TABLE 1.
MISCELLANEOUS.
METALLIC.

ANNUAL PRODUCTION OF ANTIMONY ORE.

Calendar Year.	Tons.	Value.
1886	665	\$31,490
1887	584	10,860
1888	345	3,696
1889	55	1,100
1890	26½	625
1891	10	60
1892 to 1897	Nil.	Nil.
1898	1,344	20,000
1899 to 1904	Nil.	Nil.
1905	527	.....

TABLE 2.

MISCELLANEOUS.

METALLIC.

EXPORTS OF ANTIMONY ORES.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1880.....	40	\$ 1,948	1890.....	38	\$ 1,000
1881.....	34	3,308	1891.....	3 $\frac{1}{2}$	60
1882.....	323	11,673	1892 to 1897..	Nil.	Nil.
1883.....	165	4,200	1898.....	1,232	15,295
1884.....	483	17,875	1899.....	6 $\frac{3}{4}$	190
1885.....	758	36,250	1900.....	210	3,441
1886.....	665	31,490	1901.....	10	1,643
1887.....	229	9,720	1902.....	90	13,658
1888.....	352 $\frac{1}{2}$	6,894	1903.....	33	4,332
1889.....	30	695	1904.....	160	7,237
			1905.....	525	27,118

TABLE 3.

MISCELLANEOUS.

METALLIC.

IMPORTS OF ANTIMONY.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	42,247	\$ 5,903	1892.....	180,308	17,680
1881.....		7,060	1893.....	181,823	14,771
1882.....	183,597	15,044	1894.....	139,571	12,249
1883.....	105,346	10,355	1895.....	79,707	6,131
1884.....	445,600	15,564	1896.....	163,209	9,557
1885.....	82,012	8,182	1897.....	134,661	8,031
1886.....	89,787	6,951	1898.....	156,451	12,350
1887.....	87,827	7,122	1899.....	289,066	16,851
1888.....	120,125	12,242	1900.....	186,997	20,001
1889.....	119,034	11,206	1901.....	350,737	24,714
1890.....	117,066	17,439	1902.....	504,822	39,276
1891.....	114,084	17,483	1903.....	868,146	65,434
			1904.....	418,943	27,112

1905	{ Antimony, or regulus of, not ground, pulverized or otherwise manufactured. Antimony salts.....	Duty.		
		Free.	92,785	6,664
		"	93,669	6,164
Total.....			186,454	12,828

COBALT.

According to returns made to the Ontario Bureau of Mines the production of cobalt in 1904 was 29 tons, valued at \$36,620, derived partly from the nickeliforous ores of the Sudbury district and partly from the silver-cobalt arsenides of Coleman township. In 1905, accord-

SESSIONAL PAPER No. 26a /

ing to the same authority, the production of the latter district, was 120 tons, valued at \$100,000.

MERCURY.

There has been no production of mercury since 1897. The small production reported in 1895, 1896 and 1897, was derived from the deposits at the western end of Kamloops lake, B.C. These deposits consist of quartz veins containing pockets of cinnabar. These veins are in a zone of decomposed volcanic rock of Tertiary age.

TABLE 4.

MISCELLANEOUS.

METALLIC.

PRODUCTION OF MERCURY.

Calendar Year.	Flasks (76½ lb.)	Price per flask.	Value.
1895.....	71	\$ 33 00	\$ 2,343
1896.....	58	33 44	1,940
1897.....	9	36 00	324

TABLE 5.

MISCELLANEOUS.

METALLIC.

IMPORTS OF MERCURY.

Fiscal Year.	Pounds.	Value.
1882.	2,443	\$ 965
1883.	7,410	2,991
1884.	5,848	2,441
1885.	14,490	4,781
1886.	13,316	7,142
1887.	13,409	10,618
1888.	27,951	14,943
1889.	22,931	11,844
1890.	15,912	7,677
1891.	29,775	20,223
1892.	30,936	15,038
1893.	50,711	22,998
1894.	36,914	14,483
1895.	63,732	25,703
1896.	77,869	32,343
1897.	76,058	33,534
1898.	59,759	36,425
1899.	103,017	51,695
1900.	85,342	51,987
1901.	140,610	94,564
1902.	97,283	56,615
1903.	164,968	91,625
1904.	151,107	80,658
1905. Duty free	103,330	48,412

PLATINUM.

Although the occurrence of platinum in the placer gravels is so wide spread throughout British Columbia, only about \$500 worth was obtained from gravels near Granite creek, Similkameen. While the Consolidated Cariboo Hydraulic Mining Company of Cariboo, and the Berry Creek Mining Company of Thiebert creek, Cassiar, each recovered small quantities in an experimental way. The manager of the latter company reports—"Experiments were made to concentrate the black sands containing minerals belonging to the platinum group. For this purpose an undercurrent and a series of tables covered with cocoa matting, canvas and burlap, were installed at the end of No. 2 sluice.

"Although it was this year largely experimental, the mechanical concentration was quite satisfactory. During the 21 days that the concentrating plant was in operation it yielded 250 pounds of concentrates, and this amount could have been greatly increased by a man in attendance with some experience in concentration.

"Assays of these concentrates, made at the British Columbia Government Assay Office, gave 60 ounces of platinum to the ton of concentrates, and assays obtained in San Francisco gave up to 15 ounces of platinum and 7 ounces of gold per ton. These results were obtained almost entirely from top gravel, and as the bottom gravels will naturally contain more of the heavier minerals the concentrates from the latter should be very much better than this year's output."

TABLE 6.

MISCELLANEOUS.

METALLIC.

ANNUAL PRODUCTION OF PLATINUM.

Calendar Year.	Value.	Calendar Year.	Value.
1887.....	\$ 5,600	1897.....	\$ 1,600
1888.....	6,000	1898.....	1,500
1889.....	3,500	1899.....	825
1890.....	4,500	1900.....	Nil.
1891.....	10,000	1901.....	457
1892.....	3,500	1902.....	46,502
1893.....	1,800	1903.....	33,345
1894.....	950	1904.....	10,872
1895.....	3,800	1905.....	500
1896.....	750		

TABLE 7.
MISCELLANEOUS.
METALLIC.
IMPORTS OF PLATINUM.

Fiscal Year.	Value.	Fiscal Year.	Value.
1883.....	\$ 113	1895.....	\$3,937
1884.....	576	1896.....	6,185
1885.....	792	1897.....	9,031
1886.....	1,154	1898.....	9,781
1887.....	1,422	1899.....	9,671
1888.....	13,475	1900.....	57,910
1889.....	3,167	1901.....	20,263
1890.....	5,215	1902.....	19,357
1891.....	4,055	1903.....	21,251
1892.....	1,952	1904.....	28,112
1893.....	14,082	1905*.....	61,719
1894.....	7,151		

* Platinum wire and platinum in bars, strips, sheets or plates, platinum retorts, pans, condensers, tubing and pipe, imported by manufacturers of sulphuric acid for use in their works. Duty free.

The larger production shown for the years 1902, 1903, 1904 was obtained from the ores of the Sudbury district, Ontario, or rather it was derived from the residues accumulated during a number of previous years during the treatment of the nickel copper mattes shipped from this district.

PALLADIUM.

It has been known for a long time that palladium was present in the nickel ore of the Sudbury district, but in past years no definite information could be obtained as to whether the metals of the platinum group were saved in the treatment which the ores and mattes underwent. As far back as 1889 it was discovered that sperrylite, the arsenide of platinum, which is present in the Sudbury ores, contained traces of palladium, but the occurrence was noted as being only of mineralogical interest. Of late years, however, the sources of platinum have not been able to supply the demand and palladium is being considered as a possible substitute on account of its malleability and high melting point (Palladium 1500°C, Platinum 1750°C).

The metal palladium is now being recovered from the Sudbury ores and according to figures received by the Ontario Bureau of Mines, the production for the past three years has been as follows :

	Ounces	Value
1902.....	4,411.....	\$86,014
1903.....	3,177.....	61,952
1904.....	952.....	18,564

The high figures for 1902 and 1903 are perhaps due to working over some accumulation of old residue from matte treated in previous years.

TIN.

No deposits of tin of an economic nature, have yet been discovered in Canada, although reports that tin ores have been discovered in large quantities in this country are very frequent. We give in the table below, figures relating to the Canadian tin trade.

TABLE 8.

MISCELLANEOUS.

METALLIC.

IMPORTS OF TIN AND TINWARE.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.	\$ 281,880	1893.	\$1,242,994
1881.	413,924	1894.	1,310,389
1882.	790,285	1895.	973,397
1883.	1,274,150	1896.	1,237,684
1884.	1,018,493	1897.	1,274,108
1885.	1,060,883	1898.	1,550,851
1886.	1,117,368	1899.	1,372,813
1887.	1,187,312	1900.	2,418,455
1888.	1,164,273	1901.	2,339,109
1889.	1,243,794	1902.	2,293,958
1890.	1,289,756	1903.	2,712,186
1891.	1,206,918	1904.	2,389,557
1892.	1,594,205		
		Duty.	
1905 {	Tin crystals.	Free.	\$ 2,064
	Tin in blocks, pigs and bars.	"	819,038
	Tin plates and sheets.	"	1,751,507
	Tin foil.	"	62,813
Tinware, plain, japanned, or lithographed and all manufactures of tin, N.E.S.		25 %	156,335
Total.			\$2,791,757

NON METALLIC.

ABRASIVE MATERIALS.

Included under this heading, there are produced in Canada, corundum, the various sandstone abrasives, such as grindstones, pulpstones, whetstones, etc., and tripolite or infusorial earth.

Corundum.—The total shipments of grain corundum in 1905 from mills in Canada, was 1,644 tons, valued at \$149,153 f.o.b. at railway shipping points. Compared with the shipments in 1904 there is an increase of 651 tons or over 65 per cent.

Detailed statistics of output and sales for 1905 were as follows:

Rock treated	23,570 tons
Grain corundum graded	3,361,838 pounds

Shipments—

Grain corundum sold in Canada	280,050 pounds
Grain corundum sold in other countries.....	3,008,217 "
Total sales	3,288,717 pounds

Two companies were mining corundum rock and operating mills during the year. The Canada Corundum Company, Ltd., Toronto, the largest operator, worked the Craig mine at Craigmont, Renfrew county, but the mill was shut down a good part of the year, while making changes. There were 190 men employed during the year. The Ashland Emery and Corundum Company have taken over the mills and chattels of the Ontario Corundum Company. The property is located at Burgess Mines, P. O., Hastings county, Ont., and 20 men were employed for about half the year. The Corundum Refineries Ltd., were opening up a property at Jewellville, Ont., but were not in a position to produce during the year.

Statistics of shipments since 1900, are as follows :—

	Quantity.	Value.
1900 grain corundum.....	3 tons.	\$ 300
1901 "	387 "	46,415
1902 "	768 "	84,465
1903 " 703 } corundum ore 267 }	970 "	80,180
1904 grain corundum	993 "	109,545
1905 "	1644 "	149,153

Statistics since 1900 showing the quantities of ore treated, the corundum produced, and the sales or shipments, are given in the following tables.

TABLE No. 1.
 ABRASIVE MATERIALS.
 PRODUCTION OF CORUNDUM ORE AND CORUNDUM.

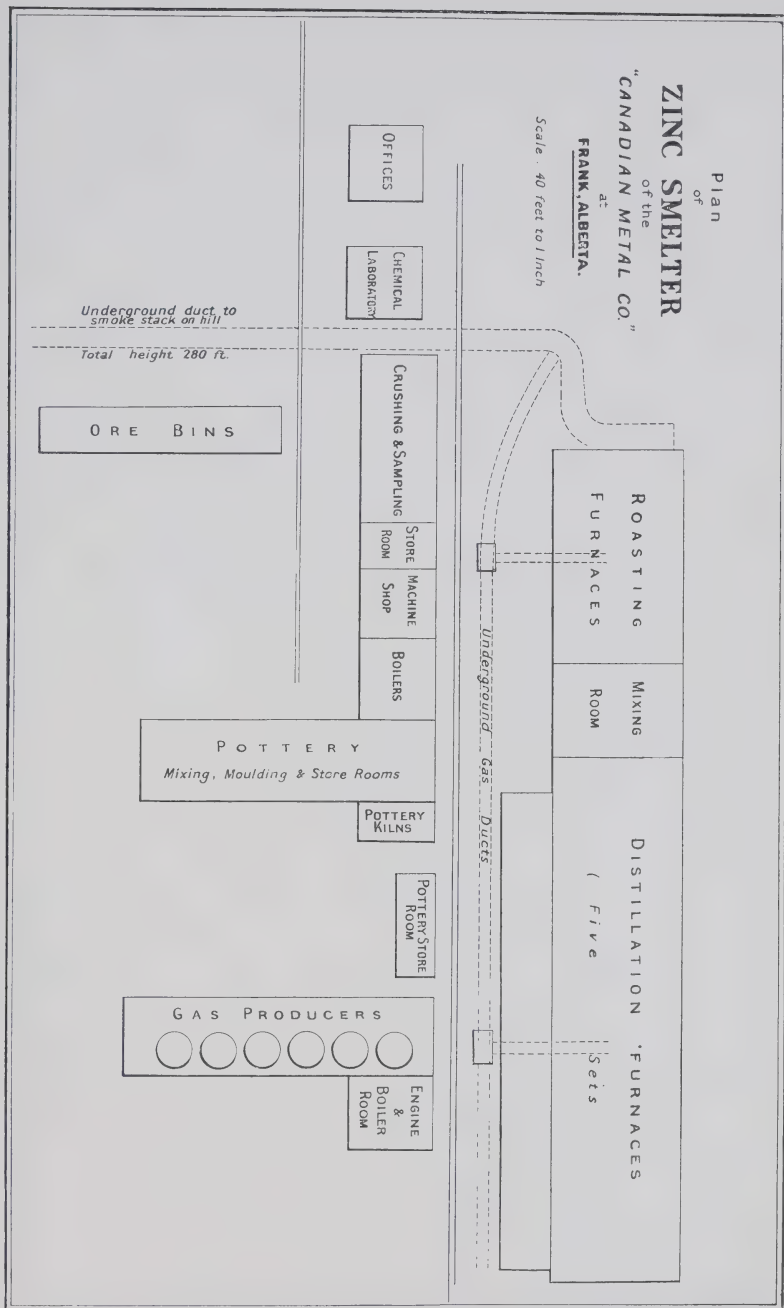
Calendar Year.	Corundum bearing rock treated.	Grain Corundum Graded	Grain Corundum Sold in Canada.	Grain Corundum Exported.	Total of Sales of Grain Corundum.
	Tons.	Tons.	Tons.	Tons.	Tons.
1900.....		60			3
1901.....	4,134	434	85	302	387
1902.....	7,996	805	106	662	768
1903.....	(a) 8,877	839	85	618	703
1904.....	28,187	1,654	116	877	993
1905.....	23,570	1,680	140	1,504	1,644

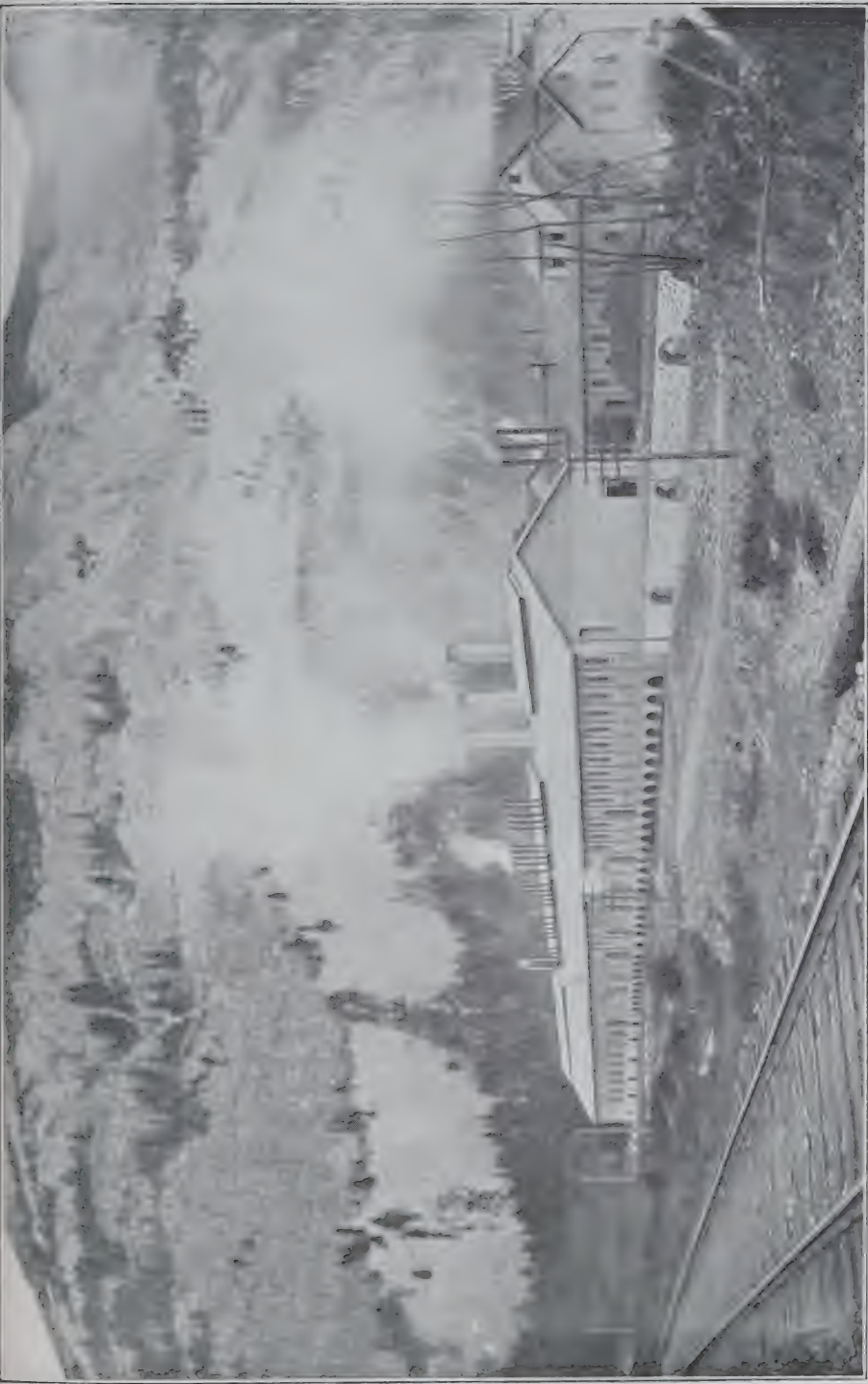
(a) In addition to this amount which was mill-d in Canada, 267 tons of ore were mined and shipped to the United States for treatment there.

Grindstones, Pulpstones, etc.—The production of grindstones, including wood-pulp stones, etc., in 1905, from quarries in Nova Scotia and New Brunswick, reached a total of 5,540 tons, valued \$62,375, showing an increase over the production in 1904 of 891 tons or over 19 per cent., and although it is the largest production reached since 1888, there has been comparatively little variation in the yearly output for the past 20 years.

These abrasives are quarried from the Millstone Grit of the Carboniferous formation which occupies a large portion of the surface of the eastern half of the province of New Brunswick and the northern and north western parts of Nova Scotia.

The grindstones are all shipped in a finished condition and are worth from \$10 to \$12 per ton. Pulp stones are sold at about \$75 per stone, the weight of the stones being about $2\frac{3}{4}$ tons. The production of them in 1905 was about 25 stones, which found a market in Canadian and United States pulp mills. Scythe or whetstones are manufactured by one firm. These are put up in one quarter gross boxes, thirty pounds to the box, and are worth about \$50 per ton. About 200 gross were made in 1905. At some of the quarries there is a considerable production of foundation and building stone, besides rough stones for breakwater and harbour works.





THE CANADIAN METAL CO., (LIMITED.)—ZINC SMELTER, FRANK, ALTA.



CANADIAN METAL CO. — FRANK, ALBERTA. — DISTILLATION OVENS.



THE CANADIAN METAL CO., (LIMITED.)—ZINC SMELTER.—POTTERY.



CANADIAN METAL CO.—GAS PRODUCERS.

SESSIONAL PAPER No. 26a

Statistics of the production by provinces since 1886, are given in table 2 below :—

TABLE 2.
ABRASIVE MATERIALS.
ANNUAL PRODUCTION OF GRINDSTONES.

CALENDAR YEAR.	NOVA SCOTIA.		NEW BRUNSWICK.		TOTAL.		AVERAGE VALUE PER TON.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	
1886.....	1,765	\$24,050	2,255	\$22,495	4,020	\$46,545	\$11 58
1887.....	1,710	25,020	3,582	38,988	5,292	64,008	12 10
1888.....	1,971	20,400	3,793	30,729	5,764	51,129	8 87
1889.....	712	7,128	2,692	23,735	3,404	30,863	9 07
1890.....	850	8,536	4,034	33,804	4,884	42,340	8 67
1891.....	1,980	19,800	2,499	22,787	4,479	42,587	9 51
1892.....	2,462	27,610	2,821	23,577	5,283	51,187	9 69
1893.....	2,112	21,000	2,488	17,379	4,600	38,379	8 34
1894.....	2,128	16,000	1,629	16,717	3,757	32,717	8 71
1895.....	1,400	14,000	2,075	17,932	3,475	31,932	9 19
1896.....	1,450	14,500	2,263	18,810	3,713	33,310	8 97
1897.....	1,407	17,500	3,165	24,840	4,572	42,340	9 26
1898.....	1,422	12,350	3,513	32,425	4,935	44,775	9 07
1899.....	1,378	10,300	3,133	32,965	4,511	43,265	9 59
1900.....	1,411	12,600	4,128	40,850	5,539	53,450	9 65
1901.....	358	3,200	4,223	42,490	4,581	45,690	9 97
1902.....	1,074	8,118	3,559	36,000	4,633	44,118	9 52
1903.....	1,337	9,562	4,201	38,740	5,538	48,302	8 72
1904.....	1,029	7,332	3,620	35,450	4,649	42,782	9 20
1905.....	1,020	10,200	4,520	52,175	5,540	62,375	11 25

The imports of grindstones into Canada, principally into the provinces of Ontario and Quebec, reached a total value in 1905, of \$49,747, made up of grindstones not mounted and not less than three feet in diameter to the value of \$40,869 and other grindstones to the value of \$8,878.

Statistics of the exports of grindstones and of the imports of grindstones, burrstones, emery and pumice stone, are shown in tables 3, 4, 5, 6 and 7, following:—

TABLE 3.
 ABRASIVE MATERIALS.
 EXPORTS OF GRINDSTONES.

Calendar Year.	Value.
1884.....	\$28,186
1885.....	22,606
1886.....	24,185
1887.....	28,769
1888.....	28,176
1889.....	29,982
1890.....	18,564
1891.....	28,433
1892.....	23,567
1893.....	21,672
1894.....	12,579
1895.....	16,723
1896.....	19,139
1897.....	18,807
1898*	25,588
1899*	23,288
1900*	42,128
1901*	29,130
1902*	24,489
1903*	27,659
1904*	35,612
1905*	24,868

* Including stone for the manufacture of grindstones.

SESSIONAL PAPER No. 26a

TABLE 4.
 ABRASIVE MATERIALS.
 IMPORTS OF GRINDSTONES.

Fiscal Year.	Duty.	Tons.	Value.
1880.....		1,044	\$11,714
1881.....		1,359	16,895
1882.....		2,098	30,654
1883.....		2,108	31,456
1884.....		2,074	30,471
1885.....		1,148	16,065
1886.....		964	12,803
1887.....		1,309	14,815
1888.....		1,721	18,263
1889.....		2,116	25,564
1890.....		1,567	20,569
1891.....		1,381	16,991
1892.....		1,484	19,761
1893.....		1,682	20,987
1894.....		1,918	24,426
1895.....		1,770	22,834
1896.....		1,862	26,561
1897.....		1,521	25,547
1898.....			22,217
1899.....			27,476
1900.....			34,382
1901.....			39,068
1902.....			40,838
1903.....			53,388
1904.....			46,039
1905 {	Grindstones not mounted and not less than 36 inches in diameter.....	15 p. c.	40,869
	Grindstones N.E.S.....	25 p. c.	8,878
			49,747

TABLE 5.
 ABRASIVE MATERIALS.
 IMPORTS OF BURRSTONES.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$12,049	1893.....	\$ 3,552
1881.....	6,337	1894.....	3,029
1882.....	15,143	1895.....	2,172
1883.....	13,242	1896.....	2,049
1884.....	5,365	1897.....	1,827
1885.....	4,517	1898.....	1,813
1886.....	4,062	1899.....	1,759
1887.....	3,545	1900.....	1,546
1888.....	4,753	1901.....	5,762
1889.....	5,465	1902.....	2,559
1890.....	2,506	1903.....	586
1891.....	2,089	1904.....	35
1892.....	1,464	1905.....	2,607

* Burrstones in blocks, rough or unmanufactured, not bound up or prepared for binding into mill-stones. Duty free.

TABLE 6.
 ABRASIVE MATERIALS.
 IMPORTS OF EMERY.

Fiscal Year.	Emery. <i>a.</i>	Mfrs. of Emery. <i>b.</i>
1885.....	\$ 5,066	\$ 4,920
1886.....	11,877	5,832
1887.....	12,023	4,598
1888.....	15,674	4,001
1889.....	13,565	3,948
1890.....	16,922	5,313
1891.....	16,179	6,665
1892.....	17,782	6,492
1893.....	17,762	5,606
1894.....	14,433	2,223
1895.....	14,569	7,775
1896.....	16,287	11,913
1897.....	16,318	11,231
1898.....	17,661	15,478
1899.....	21,454	22,343
1900.....	19,312	25,615
1901.....	16,311	22,190
1902.....	14,476	23,892
1903.....	18,058	22,177
1904.....	21,626	29,273
1905.....	21,980	33,250

a Emery in bulk, crushed or ground. Duty free.

b Emery wheels and manufactures of emery. Duty 25 p.c.

TABLE 7.
 ABRASIVE MATERIALS.
 IMPORTS OF PUMICE STONE.

Fiscal year.	Value.
1885.....	\$ 9,384
1886.....	2,777
1887.....	3,594
1888.....	2,890
1889.....	3,232
1890.....	3,003
1891.....	3,696
1892.....	3,282
1893.....	3,798
1894.....	4,160
1895.....	3,609
1896.....	3,721
1897.....	2,903
1898.....	3,829
1899.....	5,973
1900.....	5,604
1901.....	5,516
1902.....	7,254
1903.....	6,152
1904.....	6,537
*1905.....	8,447

* Pumice and pumice stone, ground or unground. Duty free.

SESSIONAL PAPER No. 26a

Tripolite.—Owing to the destruction by fire of the mill at Bass River, Nova Scotia, in October, 1905, after having run about two months only, the shipments of tripolite were comparatively small, amounting to only 200 tons, valued at \$3,600 at the mill. Practical nothing was done on the tripolite deposits at St. Anns bay, Cap Breton.

Statistics of production since 1896, are given in the following table:—

TABLE 8.
ABRASIVE MATERIALS.
PRODUCTION OF TRIPOLITE.

Calendar Year.	Tons.	Value.
		\$
1896	664	9,960
1897	15	150
1898	1,017	16,660
1899	1,000	15,000
1900	336	1,950
1901	850	15,300
1902	1,052	16,470
1903	835	16,700
1904	320	6,400
1905	200	3,600

Grindstone Quarries.

NOVA SCOTIA.—In Nova Scotia at the present time, only two quarries are operated for stone for the manufacture of grindstones, one at Lower Cove about three miles above Joggins on the Bay of Fundy in Cumberland county, the other on Quarry Island, a mile and half across the harbour from West Merigomish in Pictou county.

Lower Cove.—The Lower Cove quarry is operated by the Atlantic Grindstone Coal and Railway Company, (Fred Huestis, manager). Located on the Bay of Fundy shore, the stone, a light gray in colour, was at first quarried at the water's edge, but the present point of operation is just a little to the east. The rock dips steeply to the south with a strike east and west. The quarry as now operated is down to a depth of 60 feet. A wire cable $2\frac{1}{2}$ inches in diameter and span of nearly 1,000 feet with travelling clutch and lifting capacity of about 20 tons, delivers the stone to tram cars which convey it to the gang saws of which there are six in operation. The plant is very complete and ample for a large output. Power is supplied by two Mumford boilers of 125 horse-power each, built by the Robb

Engineering Company of Amherst, operating through a 250 h.p. tandem cylinder compound engine built by the same firm.

In the quarry there are several ledges of very good stone; there is also a great deal of 'bull' and broken rock, so that quarrying has been somewhat expensive. Grindstones are being made in all sizes from 5 inches to 7 feet in diameter and varying in width from $\frac{3}{4}$ of an inch to 15 inches. About five different grits are met with. The coarser grits are used for grinding axes, &c., the medium for grinding scythes, hay knives, &c., and the finer grit or blue stone for cutlery. Preparations are being made to make scythestones, whetstones, oil stones, &c. Some of the waste not suitable for grindstones is trimmed to shape and sold for foundation stone. The larger grindstones measuring 14 inches in width by 7 feet in diameter weigh about $3\frac{1}{2}$ tons.

Shipments are made chiefly by boat to Portland and Providence for points throughout the New England States and west to Chicago. A small quantity of the smaller stones is shipped by rail from Joggins station, chiefly for local markets in Nova Scotia and New Brunswick.

Quarry Island—The grindstone quarry at Quarry Island, Pictou county, is operated by James Stevenson and Jas. W. Sutherland. It is situated a mile and a half across the harbour from West Merigomish, and about 12 or 13 miles from New Glasgow, and can be approached either by boat from West Merigomish or by driving direct from New Glasgow. On the south side of the island the rock ledges from which the stone is obtained dip away from the water's edge to the northeast or north and into the bank on which there is a very heavy and rising covering of clay of a height of 21 feet and upwards so that it is not profitable to follow the stone very far under the bank. For a distance of 400 feet or more along the shore stone has been taken out at various places, operations having extended over a long period of time with a comparatively small annual output. The stone is got out by hand-drilling and blasting, is rough trimmed into shape by hand and turned on a lathe, and grindstones are made varying from 4 to 6 feet in diameter. Two derricks operated by steam power are used to raise stone from the main opening. When sufficient stone is accumulated, shipments are made by schooner to New England points, and occasionally car load lots are shipped from Merigomish, in which case the stone is scowed across the harbour and hauled a half mile up hill to Merigomish Station. Coal for use under the boiler has also to be scowed across the harbour. About 6 or 8 men were employed under Captain Stevenson during 1905.

SESSIONAL PAPER No. 26a

NEW BRUNSWICK.—Grindstone quarries were worked in the province of New Brunswick during 1905 at Clifton, Stonehaven and Grande Anse on the Bay of Chaleur in Gloucester county and at Woodpoint and Rockport on Chignecto Bay in Westmoreland county, while stone for grinding wood pulp was made at Wm. Hood and Sons quarry at Indiantown, on the Miramichi river, Northumberland county.

Three quarries were operated on the Bay of Chaleur during 1905, the most important being that at Stonehaven owned by Joseph Read & Co., in fact this and the quarries at Woodpoint owned by Henry Read of Sackville are the largest producing grindstone quarries at present worked. The quarries on the Bay of Chaleur are all on the shore about a mile from the line of the Caraquet and Gulf Shore Railway and from 20 to 30 miles from Bathurst on the Intercolonial Railway.

The Stonehaven quarry was in charge of Mr. Gordon Read with Amos Como as foreman. The stone was formerly quarried at low water, and floated in under rafts at high tide, but at present a sea wall built of clay and stone and being constantly added to by the waste from the quarry protects a considerable area from which stone can be taken below sea level. The stone is taken out and rough trimmed mostly by hand, a great deal being done under a system of piece work. Two gangs of saws and 8 lathes are operated in the mill by a 62-h.p. engine, while an engine of 25-h.p. is used for operating three derricks and pumping the water from the quarry. Grindstones of all sizes are made up to 7 feet by 15 inches as well as the small scythe and whetstones. The annual output is now over 2,500 tons, valued at the quarry at from \$10 to \$12 per gross ton. Shipments are made to wholesale firms in Quebec and Montreal and to New Haven, Boston and other New England points. Freight rates to Montreal are about 16½ cents per hundred pounds and to New Haven, Conn., from \$3 to \$3.50 per gross ton.

About two miles to the west of Stonehaven, grindstones are being made by W. R. Knowles at Clifton. The sandstone is covered by about a depth of 32 feet of clay and shale and occurs at a height of about 70 feet above sea level. There is an available thickness of about 14 feet of stone suitable for grindstone making. Grindstones are made varying in size from 12 inches to 7 feet in diameter and shipments are made chiefly to New England points. Steam machinery is employed to operate a steam shovel for removing the over-burden of clay and shale and for running gang saws and lathes for cutting and finishing the stone. The annual output is from 300 to 400 tons. About 6 feet

below the freestone is found a small 6 inch seam of coal which has been mentioned in early geological reports, and at a further depth of 60 feet, a second 6 inch coal seam is found.

Between Clifton and Stonehaven is a quarry formerly worked by Lombard & Co. This quarry has, however, been abandoned for the present, and the company has opened a new quarry at Grande Anse about 10 miles further along the coast, where the usual machinery, gang saws and lathes, for finishing the stone is set up. This quarry is being worked by Messrs. McGill & Co., for Lombard & Co. of Boston. The sand-tone at Grande Anse was also being used in building a large catholic church at that place.

The grindstone quarries in Westmoreland county, owned by Henry C. Read of Sackville, are worked in much the same way as those on the Bay of Chaleur. The grindstones are largely quarried at Rockport and brought to Woodpoint to be finished on the lathes. The annual output is from 1,200 to 1,500 tons.

At Woodpoint a building stone quarry is also worked by the same operator and a large quantity of good sandstone has been removed and used in many important buildings throughout the country.

At Indiantown, in Northumberland county, Messrs. Wm. Hood & Son of Montreal, have been opening up and working a sandstone quarry. The stone of light gray or buff colour has found a ready market in Montreal and has already been used in some important buildings. Some of the courses of stone are found to be well adapted to the manufacture of woodpulp stones, and since 1899 these have been supplied to Canadian paper makers and are also being exported to the United States.

The stone is highly commended by the firms using them. In size they measure about 54 inches diameter by 27 inches face, and are worth about \$75 each in car load lots at the quarry.

SESSIONAL PAPER No. 26a

ASBESTUS.

The variations in this industry during the past twenty-five years are illustrated by the figures in tables Nos. 1 and 2.

TABLE 1.

ASBESTUS.

PRODUCTION.—1896 TO 1905.

	Tons.	Value.	Average Value per ton.
1896—Asbestus	10,892	\$ 423,066	\$ 38.84
Asbestic.....	1,358	6,790	5.00
	12,250	\$ 429,856	\$ 35.09
1897—Asbestus.....	13,202	\$ 399,528	\$ 30.26
Asbestic.....	17,240	45,840	2.66
	30,442	\$ 445,368	\$ 14.63
1898—Asbestus.....	16,124	\$ 475,131	\$ 29.46
Asbestic.....	7,661	16,066	2.10
	23,785	\$ 491,197	\$ 20.65
1899—Asbestus.....	17,790	\$ 468,635	\$ 26.34
Asbestic.....	7,746	17,214	2.22
	25,536	\$ 485,849	\$ 19.03
1900—Asbestus.....	21,621	\$ 729,886	\$ 33.76
Asbestic.....	7,520	18,545	2.46
	29,141	\$ 748,431	\$ 25.68
1901—Asbestus	32,892	\$ 1,248,645	\$ 37.96
Asbestic.....	7,325	11,114	1.52
	40,217	\$ 1,259,759	\$ 31.32
1902—Asbestus.....	30,219	\$ 1,126,688	\$ 37.28
Asbestic.....	10,197	21,631	2.12
	40,416	\$ 1,148,319	\$ 28.41
1903—Asbestus.....	31,129	\$ 915,888	\$ 29.42
Asbestic.....	10,548	13,869	1.31
	41,677	929,757	\$ 22.31
1904—Asbestus.....	35,611	\$ 1,213,502	\$ 34.07
Asbestic.....	12,854	12,850	1.00
	48,465	\$ 1,226,352	\$ 25.30
1905—Asbestus.....	59,669	\$ 1,486,359	\$ 29.33
Asbestic.....	17,594	16,900	.96
	68,263	\$ 1,503,259	\$ 22.02

TABLE 2.

ASBESTUS.

PRODUCTION, ETC.—1880 TO 1895.

Calendar Year.	PRODUCTION.			Exports, Average value per ton.
	Tons (2,000 lbs.)	Value.	Average value per ton.	
		\$	\$ cts.	\$ cts.
1880.....	380	24,700	65.00	Exports taken as production.
1881.....	540	35,100	65.00	
1882.....	810	52,650	65.00	
1883.....	955	68,750	71.98	
1884.....	1,141	75,097	65.80	
1885.....	2,440	142,441	58.37	
1886.....	3,458	206,251	59.64	
1887.....	4,619	226,976	49.14	
1888.....	4,404	255,007	57.90	
1889.....	6,113	426,554	69.77	
1890.....	9,860	1,260,240	127.81	
1891.....	9,279	999,878	107.75	
1892.....	6,082	390,462	64.19	
1893.....	6,331	310,156	49.02	
1894.....	7,630	420,825	55.15	
1895.....	8,756	368,175	42.05	

TABLE 3.

ASBESTUS.

EXPORTS.

Calendar Year.	Tons.	Value,	Average value per ton.
1892.....	5,380	\$373,103	\$69.35
1893.....	5,917	338,707	57.24
1894.....	7,987	477,837	59.82
1895.....	7,442	421,690	56.66
1896.....	11,842	567,967	47.96
1897.....	15,570	473,274	30.40
1898.....	15,346	494,012	32.19
1899.....	17,883	473,148	26.46
1900.....	16,993	693,105	39.61
1901.....	32,269	1,069,918	33.16
1902.....	31,074	995,071	32.02
1903.....	31,780	891,033	28.04
1904.....	37,272	1,160,887	31.14
1905.....	47,031	1,386,115	29.47

TABLE 4.

ASBESTUS.

IMPORTS.

Fiscal Year.	Value.	Fiscal year.	Value.
1885.....	\$ 674	1895.....	\$26,094
1886.....	6,831	1896.....	23,900
1887.....	7,836	1897.....	19,032
1888.....	8,793	1898.....	26,389
1889.....	9,943	1899.....	32,607
1890.....	13,250	1900.....	43,455
1891.....	13,298	1901.....	50,829
1892.....	14,090	1902.....	52,464
1893.....	19,181	1903.....	75,465
1894.....	20,021	1904.....	83,827
		*1905.....	116,836

*Asbestos in any form other than crude, and all manufactures of. Duty 25 p.c.

According to the returns received from operators there are three main grades of product, viz.: crude, mill stock and asbestic. The former represents the portions of clean fibre picked out by hand; the mill stock, as its name implies, represents a number of different products of the milling process, whilst the by-product, for which the name 'asbestic' has been adopted, consists of the residual serpentine sand, carrying a large proportion of very short fibre. This finds a sale for plastering and other uses, taking the place of the ordinary sand and hair, over which it has been claimed to have many advantages. The asbestos fibre is sold to manufacturers, who produce with it a great variety of finished articles, mill board, paper, woven goods, &c., for use where a fireproof and non-conducting material is called for.

The asbestos product of Canada comes altogether from one small district in the eastern townships of Quebec province. In this district are two chief centres, viz.: Thetford and Black Lake, both situated on the line of the Quebec Central Railway, which connects the town of Sherbrooke with Point Lévis, opposite the city of Quebec. Outside of the just-mentioned district the only largely producing mine is situated on another small serpentine area at Danville, about twenty miles in a westerly direction from the before mentioned.

These worked asbestos mines are situated on a range of extensive masses of olivine diabase rocks, which extend from the Vermont boundary in a northeasterly direction nearly to the extremity of the Gaspé peninsula. At places these rocks are considerably serpentinised, and where the asbestos occurs are completely changed into serpentine.

These serpentine areas are full of veins of chrysotile or fibrous serpentine, cutting the solid mass in every direction. The fibre lies at right angles to the walls of the little veinlets, which vary in transverse dimensions so that in quarrying fibre of all lengths up to one or two inches is obtained.

The quarrying is done with the aid of power drills and ordinary mining appliances for breaking and hoisting, and the fibre is separated by a combined process of hand sorting and crushing, with separation of the rock from the fibre by special machinery. In the Bulletin on Asbestos, issued by the Geological Survey in 1903, the following description of one of the mills will give a general idea of the method followed, with slight differences, by the operators.

The milling process is largely automatic throughout. After the rock suitable for hand cobbing is extracted, the bulk of the output is run to the mill by steam trams, and the rough material passes at once to a Blake crusher, generally of two dimensions, where it is sized for the rolls. In the King Bros' mills these are corrugated, and the rock from the crusher goes directly through the rolls, from which it passes to a series of cyclones that reduce the rock to powder and separate the contained fibre. Exhausts are provided by which the greater part of this is removed and the material from the cyclone passes on to a set of shaking screens of different sized mesh by which the fiberized material is separated ready for bagging. Boys are stationed at points to regulate the supply of the material along the conveying belts. The bottom of the mine holds a considerable amount of broken fibre, generally wet and dirty, and this before going through the mill is put through a drying cylinder set at an angle of about 5 degrees and revolving slowly, by which the moisture is readily extracted. At present the motive power in all the mills is steam.

While the general principle in all these mills is practically the same, scarcely two are built on precisely the same plan. In some, the rolls are discarded, and other points of difference are seen depending upon the conditions at different mines. The extraction of the fibre is successfully accomplished at all the mines, and a large amount of the rock output which formerly would have gone to the dump as waste material is now profitably utilized. At the present time, at Black Lake, with the exception of Mr. Johnston's new mine, and that of the American Asbestos Co., which is still in the development stage, the greater portion of the output in this district is sent to the mill and the production of crude asbestos which at one time formed an important part of the output at this place has in consequence largely fallen off.

COAL.

The production of coal for 1905 has easily retained its first place in the table showing the relative importance of the various Canadian mineral products. Fossil fuel in 1905 contributed nearly 26 per cent of the total mineral production of Canada. (See table, page 9.) Gold, which comes next in the list, contributed slightly over 21 per cent.

For the year ending December 31st 1905, Canada's coal production amounted to 8,667,948 short tons, valued at \$17,520,263, of which the detailed statistics are given in tables 1, 2 and 3.

TABLE 1.

COAL.

PRODUCTION BY PROVINCES, 1903, 1904 and 1905.

Province.	1903.		1904.		1905.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
Nova Scotia.....	5,653,338	10,095,246	5,596,241	9,993,288	5,646,583	10,083,184
British Columbia	1,676,581	4,490,844	1,862,625	4,989,174	1,945,452	5,211,030
North-west Territories including Yukon	614,445	1,316,743	786,617	1,591,545	1,046,513	2,167,249
New Brunswick.	16,000	40,000	9,112	18,224	29,400	58,800
Total	7,960,364	15,942,833	8,254,595	16,592,231	8,667,948	17,520,263

TABLE 2.

COAL.

PRODUCTION. COMPARISON OF 1904 AND 1905.

Province	INCREASE OR DECREASE.			
	Tons.	Per cent.	Value. \$	Per cent.
Nova Scotia	<i>i</i> 50,342	<i>i</i> .89	<i>i</i> 89,896	<i>i</i> .89
British Columbia.....	<i>i</i> 82,827	<i>i</i> 4.45	<i>i</i> 221,856	<i>i</i> 4.45
North-west Territories including Yukon	<i>i</i> 259,896	<i>i</i> 33.04	<i>i</i> 575,704	<i>i</i> 36.17
New Brunswick.....	<i>i</i> 413,353	<i>i</i> 222.65	<i>i</i> 40,576	<i>i</i> 222.65
Dominion.. ..	<i>i</i> 413,353	<i>i</i> 5.01	<i>i</i> 928,032	<i>i</i> 5.59

i Increase. *d* Decrease.

TABLE 3.

COAL.

ANNUAL PRODUCTION SHOWING THE INCREASE OR DECREASE EACH YEAR.

Calendar Year.	Tons.	Value.	Average Value per Ton.	Increase (i) or Decrease (d) in Tonnage.	Incr. (i) or Decr. (d) per cent.
1886.....	2,116,653	\$3,739,840	\$1 77		
1887.....	2,429,330	4,388,206	1 81	<i>i</i> 312,677	<i>i</i> 14·8
1888.....	2,602,552	4,674,140	1 80	<i>i</i> 173,222	<i>i</i> 7·1
1889.....	2,658,303	4,894,287	1 84	<i>i</i> 55,751	<i>i</i> 2·1
1890.....	3,084,682	5,676,247	1 84	<i>i</i> 426,379	<i>i</i> 16·0
1891.....	3,577,749	7,019,425	1 96	<i>i</i> 493,067	<i>i</i> 16·0
1892.....	3,287,745	6,363,757	1 94	<i>d</i> 290,004	<i>d</i> 8·1
1893.....	3,783,499	7,359,080	1 95	<i>i</i> 495,754	<i>i</i> 15·1
1894.....	3,847,070	7,429,468	1 93	<i>i</i> 63,571	<i>i</i> 1·7
1895.....	3,478,344	6,739,153	1 94	<i>d</i> 368,72	9·6
1896.....	3,745,716	7,226,462	1 93	<i>i</i> 267,372	7·7
1897.....	3,786,107	7,303,597	1 93	<i>i</i> 40,391	<i>i</i> 1·1
1898.....	4,173,108	8,224,288	1 97	<i>i</i> 387,001	<i>i</i> 10·2
1899.....	4,925,051	10,283,497	2 09	<i>i</i> 751,943	<i>i</i> 18·0
1900.....	5,777,319	13,742,178	2 38	<i>i</i> 852,268	<i>i</i> 17·3
1901.....	6,486,325	12,699,243	1 96	<i>i</i> 709,006	<i>i</i> 12·3
1902.....	7,466,681	15,210,877	2 04	<i>i</i> 780,356	<i>i</i> 15·1
1903.....	7,960,364	15,912,833	2 00	<i>i</i> 493,683	<i>i</i> 6·6
1904.....	8,254,595	16,592,231	2 01	<i>i</i> 294,231	<i>i</i> 3·7
1905.....	8,667,948	17,520,263	2 02	<i>i</i> 413,353	<i>i</i> 5·0

The following short table is illustrative of the growth of the coal industry, in each of the provinces for some time back. It gives the proportion of the total production to be credited to each province at various periods since 1874.

Province.	1874.	1880.	1890.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
Nova Scotia } New Bruns. } Saskatche- wan Alberta and Yukon. B. Columbia.	91	79	71	61·6	64·2	62·9	64·4	69·4	71·3	68·0	65·5
	8	20	4	8·3	6·8	6·1	6·0	6·4	7·7	9·5	12·1
	.....	.....	25	30·3	29·0	31·0	29·6	24·2	21·0	22·5	22·4

Table 2 shows a total increase for 1905 of 413,353 tons over 1904, which represents 5.01 per cent. All of the provinces contributed to this result, the production this year having in every case been greater than in 1904. Serious labour troubles closed some of the mines on Vancouver island for nearly four months during the year, but in spite of these circumstances even British Columbia shows an increase, which, however, is not as substantial as that of the previous year.

SESSIONAL PAPER No. 26a

The new provinces of Alberta and Saskatchewan have been advancing at a very rapid rate. The growing settlement of the country is of course responsible for a largely increased domestic consumption and this market will grow from year to year for a long time to come yet.

Nova Scotia has remained practically stationary since 1903. This year shows a slight increase, whereas last year a diminution had to be recorded as compared with the production for 1903.

In New Brunswick, the coal industry shows signs of great activity as compared with previous years. The production has increased from 9,000 tons in 1904 to over 29,000 tons; although the coal mining operations of this province are on a small scale owing to the thinness of the seams, yet the industry is important from the local standpoint. The quality of the coal is excellent.

The following tables give the statistics of imports and exports of coal.

TABLE 4.

COAL.

EXPORTS.

CALENDAR YEAR.	PRODUCE OF CANADA.	NOT PRODUCE.	CALENDAR YEAR.	PRODUCE OF CANADA.	NOT PRODUCE.
	Tons.	Tons.		Tons.	Tons.
1873.....	420,683	5,403	1890.....	724,486	82,534
1874.....	310,988	12,859	1891.....	971,259	77,827
1875.....	250,348	14,026	1892.....	823,733	93,988
1876.....	248,638	4,995	1893.....	960,312	102,827
1877.....	301,317	4,829	1894.....	1,103,694	89,786
1878.....	327,959	5,468	1895.....	1,011,235	96,836
1879.....	306,648	8,468	1896.....	1,106,661	116,774
1880.....	432,188	14,217	1897.....	986,130	101,848
1881.....	395,382	14,245	1898.....	1,150,029	99,189
1882.....	412,682	37,576	1899.....	1,293,169	101,004
1883.....	486,811	44,388	1900.....	1,787,777	62,776
1884.....	474,405	62,665	1901.....	1,573,661	53,894
1885.....	427,937	71,003	1902.....	2,090,268	23,453
1886.....	520,703	78,443	1903.....	1,954,629	27,138
1887.....	580,965	89,098	1904.....	1,557,412	27,308
1888.....	588,627	84,316	1905.....	1,635,287	86,792
1889.....	665,315	89,294			

TABLE 5.

COAL.

EXPORTS.—NOVA SCOTIA AND BRITISH COLUMBIA.

Calendar Year.	Nova Scotia.		*British Columbia.	
	Tons.	Value.	Tons.	Value.
1874.....	252,124	\$647,539	51,001	\$ 278,180
1875.....	179,626	404,351	65,842	356,018
1876.....	126,520	263,543	116,910	627,754
1877.....	173,389	352,453	118,252	590,263
1878.....	154,114	293,795	165,734	698,870
1879.....	113,742	203,407	186,094	608,845
1880.....	199,552	344,148	219,878	775,008
1881.....	193,081	311,721	187,791	622,965
1882.....	216,954	390,121	179,552	628,437
1883.....	192,795	336,088	271,214	946,271
1884.....	222,709	430,330	245,478	901,440
1885.....	176,287	349,650	250,191	1,000,764
1886.....	240,459	441,693	274,466	960,649
1887.....	207,941	390,738	356,657	1,262,552
1888.....	165,863	330,115	405,071	1,605,650
1889.....	186,608	396,830	470,683	1,918,263
1890.....	202,387	426,070	508,882	1,977,191
1891.....	194,867	417,816	767,734	2,958,695
1892.....	181,547	407,980	599,716	2,317,734
1893.....	203,198	470,695	708,228	2,693,747
1894.....	310,277	633,398	770,439	2,855,216
1895.....	241,091	534,479	728,283	2,692,562
1896.....	380,149	787,270	679,799	2,507,752
1897.....	307,128	642,754	630,341	2,221,737
1898.....	309,158	629,363	813,843	2,948,428
1899†.....	459,260	827,941	781,809	2,947,369

*See foot-note, table 16. †Since 1899, exports by provinces have not been published in Trade and Navigation Report.

TABLE 6.

COAL.

IMPORTS OF BITUMINOUS COAL.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1880.....	457,049	\$1,220,761	1893.....	1,603,154	3,967,764
1881.....	587,024	1,741,568	1894.....	1,359,509	3,315,094
1882.....	636,374	1,992,081	1895.....	1,444,928	3,321,387
1883.....	911,629	2,996,198	1896.....	1,538,489	3,299,025
1884.....	1,118,615	3,613,470	1897.....	1,543,476	3,254,217
1885.....	1,011,875	3,197,539	1898.....	1,684,024	3,179,595
1886.....	930,949	2,591,554	1899.....	2,171,358	3,691,946
1887.....	1,149,792	3,126,225	1900.....	2,439,764	4,310,964
1888.....	1,231,234	3,451,661	1901.....	2,516,392	4,956,025
1889.....	1,248,540	3,255,171	1902.....	3,047,392	5,712,058
1890.....	1,409,282	3,528,959	1903.....	3,511,412	7,776,717
1891.....	1,598,855	4,060,896	1904.....	4,053,900	9,108,208
1892.....	1,615,220	4,099,221	1905*.....	4,176,274	8,002,896

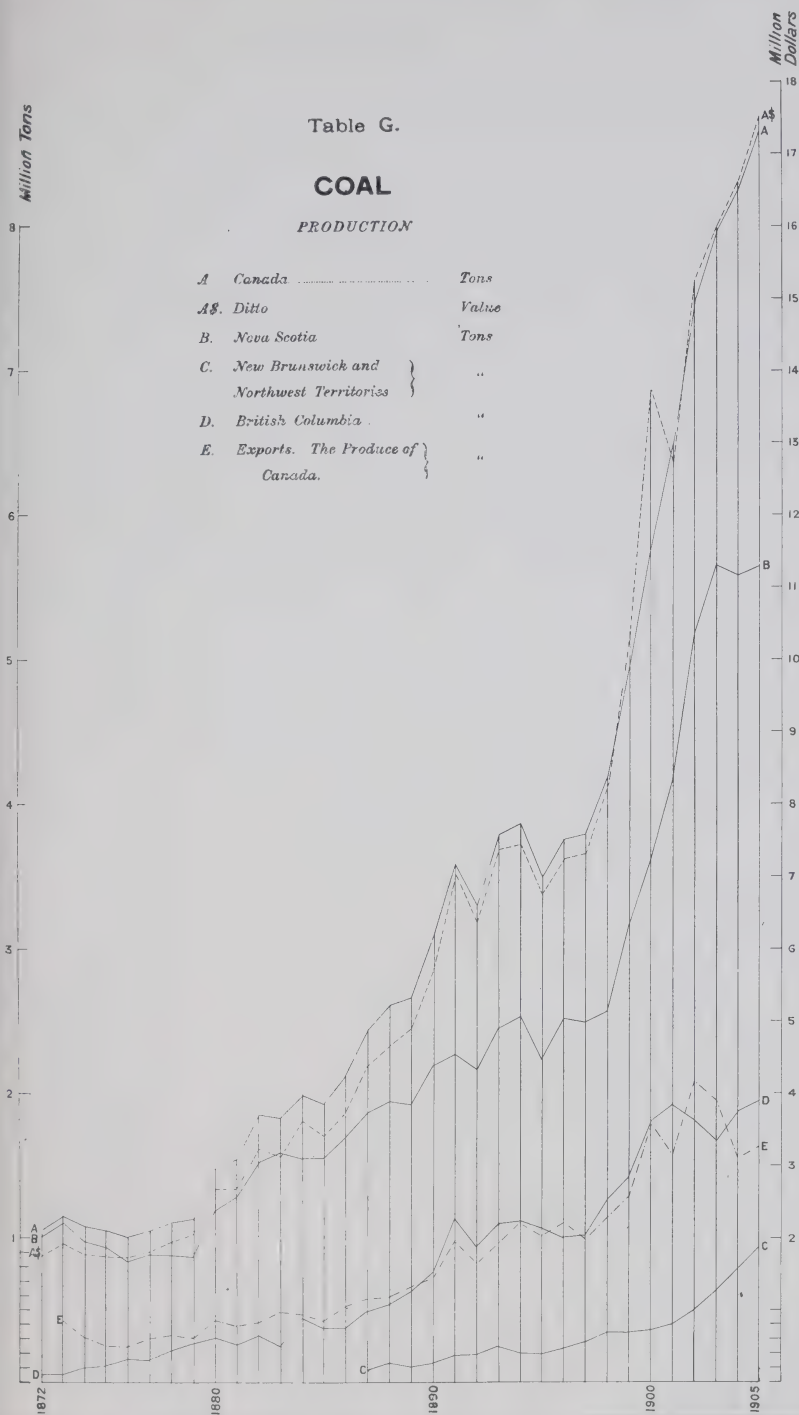
*Duty, 53c. per ton.

Table G.

COAL

PRODUCTION

<i>A</i>	<i>Canada</i>	<i>Tons</i>
<i>A\$</i>	<i>Ditto</i>	<i>Value</i>
<i>B</i>	<i>Nova Scotia</i>	<i>Tons</i>
<i>C</i>	<i>New Brunswick and Northwest Territories</i>	<i>"</i>
<i>D</i>	<i>British Columbia</i>	<i>"</i>
<i>E</i>	<i>Exports. The Produce of Canada.</i>	<i>"</i>



SESSIONAL PAPER No. 26a

TABLE 7.

COAL.

IMPORTS OF ANTHRACITE COAL.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1880.....	516,729	\$1,509,960	1893.....	1,500,550	\$ 6,355,285
1881.....	572,092	2,325,937	1894.....	1,530,522	6,354,040
1882.....	638,273	2,666,356	1895.....	1,404,342	5,350,627
1883.....	754,891	3,344,936	1896.....	1,574,355	5,667,096
1884.....	868,000	3,831,283	1897.....	1,457,295	5,695,168
1885.....	910,324	3,909,844	1898.....	1,460,701	5,874,685
1886.....	995,425	4,028,050	1899.....	1,745,460	6,490,509
1887.....	1,100,165	4,423,062	1900.....	1,654,401	6,602,912
1888.....	†1,138,627	5,291,875	1901.....	1,933,283	7,923,950
1889.....	1,291,705	5,199,481	1902.....	1,652,451	7,021,939
1890.....	1,201,335	4,595,727	1903.....	1,456,713	7,028,664
1891.....	1,399,067	5,224,452	1904*.....	2,275,018	10,461,223
1892.....	1,479,106	5,640,346	1905.....	2,604,137	12,093,371

* Coal anthracite, and anthracite coal dust. Duty free.

† In Table 7, Imports of Anthracite Coal, a very considerable increase will be noticed in 1888 over 1887, an increase of over ninety-four per cent, the falling off again in 1889 being quite as remarkable. The average values per ton for the three years 1887, 1888 and 1889, were \$4.02, \$2.47 and \$4.03 respectively. Although a duty of fifty cents per ton on anthracite coal was removed May 13, 1887, it is hardly thought this would account for the changes indicated, and unless some error may possibly have crept into the Trade and Navigation Report, no explanation is available.

TABLE 8.

COAL.

IMPORTS OF COAL DUST.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1880.....	3,565	\$ 8,877	1893.....	109,585	\$ 44,474
1881.....	337	666	1894.....	117,573	49,510
1882.....	471	900	1895.....	181,318	52,221
1883.....	8,154	10,082	1896.....	210,386	53,742
1884.....	12,782	14,600	1897.....	225,562	59,609
1885.....	20,185	20,412	1898.....	229,445	45,556
1886.....	36,230	36,996	1899.....	276,547	44,717
1887.....	31,401	33,178	1900.....	330,174	98,349
1888.....	28,808	34,730	1901.....	414,432	275,559
1889.....	39,980	47,139	1902.....	489,548	264,550
1890.....	53,104	29,818	1903.....	550,883	420,317
1891.....	60,127	36,130	1904.....	608,041	544,123
1892.....	82,091	39,840	1905*.....	650,261	343,456

* Duty 20 p.c., not over 13c. per ton.

The imports of coal into Canada comprise bituminous and anthracite. The former is mainly to supply the industrial wants of the province of Ontario and Western Quebec, whereas the anthracite is almost exclusively used for domestic purposes. The Western provinces derive

their domestic supply from the Cascades coal field, on the eastern slope of the Rocky Mountains on the main line of the Canadian Pacific Railway, where a good anthracite is produced, and also from the Belly river field, the Crows Nest Pass branch of the same railway, which yields a soft coal, high in fixed carbon, greatly prized for domestic purposes.

The following calculations show that Canada has to import about one half of the coal it consumes, but if we take into consideration the quantities that are exported from British Columbia and Nova Scotia, the Canadian production of coal would fill approximately 60 per cent of the requirements of the Dominion.

CONSUMPTION OF COAL IN CANADA, 1905.

	Tons.
Production, Table 3.....	8,667,948
Exports of Canada, Table 4.....	1,635,287
Home consumption of Canadian coal.....	7,032,661
Imports Tables 6, 7 and 8.....*	7,430,672
Exports net produce.....	86,792
Canadian consumption of imported coal.....	7,343,880
Total consumption of coal in Canada.....	14,376,541

TABLE 9.

COAL.

CONSUMPTION OF COAL IN CANADA.

Calendar Year	Canadian.	Imported.	Total.	Percentage Canadian.	Percentage Imported.	Consumption per capita.
	Tons.	Tons.	Tons.			Tons.
1886.....	1,595,950	1,884,161	3,480,111	45·9	54·1	·758
1887.....	1,848,365	2,192,260	4,040,625	45·7	54·3	·871
1888.....	2,013,925	3,314,353	5,328,278	37·8	62·2	1·137
1889.....	1,992,988	2,490,931	4,483,919	44·4	55·6	·946
1890.....	2,360,196	2,581,187	4,941,383	47·8	52·2	1·031
1891.....	2,606,490	2,980,222	5,586,712	46·7	53·3	1·153
1892.....	2,464,012	3,082,429	5,546,441	44·4	55·6	1·133
1893.....	2,823,187	3,110,462	5,933,649	47·6	52·4	1·198
1894.....	2,743,376	2,917,818	5,661,194	48·5	51·5	1·130
1895.....	2,467,109	2,933,752	5,400,861	45·7	54·3	1·066
1896.....	2,639,055	3,206,456	5,845,511	45·1	54·9	1·140
1897.....	2,799,977	3,124,485	5,924,462	47·3	52·7	1·143
1898.....	3,023,079	3,274,981	6,298,060	48·0	52·0	1·200
1899.....	3,631,882	4,092,361	7,724,243	47·0	53·0	1·454
1900.....	3,989,542	4,361,563	8,351,105	47·8	52·2	1·561
1901.....	4,912,664	4,810,213	9,722,877	50·5	49·5	1·810
1902.....	5,376,413	5,165,938	10,542,351	51·0	49·0	1·927
1903.....	6,005,735	5,491,870	11,507,605	52·2	47·8	2·055
1904.....	6,697,183	6,909,651	13,606,834	49·2	50·8	2·346
1905.....	7,032,661	7,343,880	14,376,541	48·9	51·1	2·396

We give below the main features of the year's development of the coal mining industry by provinces.

SESSIONAL PAPER No. 26a

Nova Scotia.—In Cape Breton county seven of the collieries of the Dominion Coal Company shipped continuously. The eighth colliery, which is the new mine, Dominion No. 6, started to ship in June. This No. 6 is situated on the point of land formed by Big Glace Bay on the one side and Schooner Pond on the other. Two double slopes have been driven on the Phalen seam, one pair being called the East Slope and the other the West Slope. The two pairs are not parallel but converge towards the outcrop, the angle between them being somewhat over 70 degrees. The mouths of the slopes are sufficiently near to one another to be worked by one bank head which will be of steel, while the surface plant will be modern and up to date.

Another feature of the year in the Dominion Coal Company's field is the extensive submarine development, which has been undertaken with the view of extending the workings as far as possible under the sea. The mine chosen for this experiment is the Hub, or Dominion No. 7. The main level in November, 1905, was in 4600 feet from the shaft, or over 3000 feet under the water from high water mark. It is intended to ultimately extract 2000 tons a day from this submarine area in this mine. It might be of interest to mention that the old names of some of the collieries have been discarded by the company and the mines are now officially designated by numbers as follows:—

OLD NAMES.

Dominion No. 1.
 Dominion No. 2 (Phalen Seam)
 Dominion No. 4.
 Caledonia Colliery.
 Reserve Colliery.
 New Mine.
 Hub Colliery.
 International.
 Dominion No. 9 (Harbour Seam)

NEW DESIGNATION.

Dominion No. 1.
 Dominion No. 2.
 Dominion No. 3.
 Dominion No. 4.
 Dominion No. 5.
 Dominion No. 6.
 Dominion No. 7.
 Dominion No. 8.
 Dominion No. 9.

TABLE 10.
COAL.
NOVA SCOTIA:—OUTPUT, SALES, COLLIERY CONSUMPTION, AND PRODUCTION.

Calendar Year.	Output, Tons, 2,240 lbs.	Sales, Tons, 2,240 lbs.	Colliery Consumption, Tons, 2,240 lbs.	Production*, Tons, 2,240 lbs.	Output, Tons, 2,000 lbs.	Sales, Tons, 2,000 lbs.	Colliery Consumption, Tons, 2,000 lbs.	Production*, Tons, 2,000 lbs.	Price per Ton, 2,240 lbs.	Value of production.
1872.....	880,950	785,914	110,341	896,255	986,664	880,224	123,582	1,003,806	\$1 75	\$1,568,446
1873.....	1,051,467	881,106	108,398	989,594	1,177,643	986,839	121,406	1,108,245	1 75	1,731,632
1874.....	872,720	749,127	119,582	868,707	977,446	839,022	133,903	972,954	1 75	1,520,240
1875.....	781,165	706,795	124,110	880,905	874,905	791,610	139,003	930,613	1 75	1,454,084
1876.....	694,646	634,207	113,788	747,995	794,804	710,312	127,443	887,755	1 75	1,308,991
1877.....	757,496	687,065	98,841	785,906	848,396	769,513	110,702	880,215	1 75	1,375,339
1878.....	770,603	698,511	88,627	782,138	863,075	776,732	99,262	875,994	1 75	1,368,741
1879.....	788,271	688,634	84,787	773,411	882,863	771,259	94,961	866,220	1 75	1,353,469
1880.....	1,032,710	954,659	96,831	1,051,490	1,156,635	1,069,218	108,451	1,177,669	1 75	1,840,108
1881.....	1,124,270	1,035,014	107,888	1,142,902	1,259,183	1,159,216	120,834	1,280,050	1 75	2,000,079
1882.....	1,365,811	1,250,179	111,381	1,361,560	1,529,708	1,413,048	124,747	1,524,947	1 75	2,382,730
1883.....	1,422,553	1,297,523	111,949	1,409,472	1,593,259	1,453,226	125,383	1,578,609	1 75	2,466,576
1884.....	1,380,295	1,261,650	116,769	1,378,419	1,556,011	1,413,048	130,781	1,543,829	1 75	2,412,233
1885.....	1,352,205	1,254,510	127,624	1,382,134	1,514,470	1,405,051	142,939	1,547,990	1 75	2,418,735
1886.....	1,502,611	1,373,666	142,421	1,516,087	1,682,924	1,538,506	159,512	1,698,018	1 75	2,653,152
1887.....	1,670,830	1,519,684	139,777	1,659,461	1,871,380	1,702,046	156,556	1,888,596	1 75	2,904,057
1888.....	1,776,128	1,576,692	157,443	1,734,135	1,989,263	1,765,895	176,386	1,942,231	1 75	3,034,735
1889.....	1,756,279	1,555,107	188,131	1,713,298	1,967,082	1,741,720	177,107	1,918,827	1 75	2,998,167
1890.....	1,984,001	1,786,111	161,240	1,947,351	2,222,081	2,000,444	180,589	2,181,033	1 75	3,407,864
1891.....	2,044,784	1,849,945	174,983	2,024,928	2,290,158	2,071,938	195,981	2,267,919	1 75	3,543,624
1892.....	1,942,780	1,752,394	175,092	1,928,026	2,175,913	1,963,286	196,103	2,159,389	1 75	3,374,046
1893.....	2,223,042	1,977,543	205,425	2,182,968	2,489,807	2,214,848	230,076	2,444,924	1 75	3,820,194
1894.....	2,250,631	2,060,920	196,206	2,257,126	2,520,707	2,308,231	219,751	2,527,982	1 75	3,949,970
1895.....	1,999,756	1,793,098	185,639	1,986,737	2,290,727	2,008,270	216,875	2,225,145	1 75	3,476,790
1896.....	2,292,675	2,046,828	192,975	2,239,803	2,507,796	2,292,447	216,132	2,508,579	1 75	3,919,655
1897.....	2,340,031	2,044,672	181,716	2,226,388	2,567,796	2,290,432	203,592	2,493,554	1 75	3,896,179
1898.....	2,262,656	2,121,126	167,428	2,288,554	2,534,175	2,375,661	187,519	2,563,180	1 75	4,004,970
1899.....	2,865,443	2,633,989	177,460	2,811,449	3,209,266	2,950,067	198,755	3,148,822	2 00	5,622,898
1900.....	3,298,791	2,998,737	236,563	3,235,300	3,694,646	3,358,585	264,951	3,623,536	2 00	6,458,250
1901.....	3,821,033	3,411,127	301,434	3,712,561	4,279,557	3,820,462	337,606	4,158,068	1 75	6,496,982
1902.....	4,725,480	4,229,120	379,198	4,608,318	5,292,538	4,736,614	424,702	5,161,316	2 00	9,216,636
1903.....	5,215,562	4,565,720	481,903	5,047,623	5,841,429	5,113,607	539,731	5,653,338	2 00	10,095,246
1904.....	5,131,985	4,551,740	444,904	4,996,644	5,747,823	5,097,949	498,292	5,596,241	2 00	9,993,288
1905.....	5,197,877	4,613,818	427,774	5,041,592	5,821,622	5,167,476	479,107	5,646,583	2 00	10,083,184

* This Production is obtained by adding Sales and Colliery Consumption. For sales previous to 1872, see report of the Department of Mines, Nova Scotia, 1883, page 68.

SESSIONAL PAPER No. 26a

TABLE II.

COAL.

NOVA SCOTIA :—COAL TRADE BY COUNTIES.

CALENDAR YEAR.	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.
1st quarter.....	131,564	103,656	143,611	111,182	686,523	513,023	31,254	19,872
2nd "	188,951	161,334	174,598	140,971	1,130,453	983,806	55,849	40,925
3rd "	175,151	150,812	164,965	146,779	1,200,703	1,296,063	63,966	47,707
4th "	197,834	173,262	185,280	162,005	1,231,291	1,065,747	59,629	44,330
Total, 1905.....	698,500	595,064	668,454	560,937	4,248,970	3,858,641	210,698	152,834
" 1904.....	731,316	621,169	716,928	622,358	3,973,433	3,613,169	332,146	241,253

TABLE 12.

COAL.

NOVA SCOTIA:—OUTPUT BY COLLIERIES DURING THE CALENDAR YEAR 1905.

Colliery.	Tons, 2,000 lbs.	Colliery.	Tons, 2,000 lbs.
<i>Cumberland County.</i>		<i>Inverness County.</i>	
Chignecto.....	42,641	Mabou.....	3,549
Joggins.....	59,957	Port Hood.....	16,635
Minudie.....	37,860	Inverness.....	187,789
Scotia.....	3,254	<i>Victoria County.</i>	
Springhill.....	534,116	New Cambellton.....	3,224
Strathcona.....	10,345	<i>Cape Breton County.</i>	
Prospect.....	5,328	Sydney Coal Co.....	4,316
<i>Pictou County.</i>		Dominion Coal Co.....	3,572,416
Acadia.....	358,590	N. Scotia Steel & Coal Co.	625,303
Nova Scotia Steel and Coal Co.....	43,614	Gowrie and Blockhouse collieries.....	46,935
Intercolonial.....	266,240	Total.....	5,821,622

The following table shows the markets to which the Nova Scotia coal finds its way. Outside of the province itself the main outlets are the Province of Quebec and the exports to the United States.

TABLE 13.

COAL.

NOVA SCOTIA:—DISTRIBUTION OF COAL SOLD.

Markets.	Calendar Years.					
	1902.		1903.		1904.	
	Tons, 2,000 lbs.	Per cent.	Tons, 2,000 lbs.	Per cent.	Tons, 2,000 lbs.	Per cent.
Nova Scotia, transported by land.....	727,122	14.2	918,822	18.0	1,145,255	27.4
Nova Scotia, transported by sea.....	977,756	19.1	724,289	14.2	485,574	9.4
Total, Nova Scotia...	1,704,878	33.3	1,643,111	32.2	1,900,829	36.8
New Brunswick.....	435,537	8.5	474,053	9.3	477,360	9.2
Prince Edward Island.....	88,649	1.7	95,177	1.9	85,099	1.7
Quebec.....	1,609,205	31.5	1,916,384	37.6	1,721,751	33.3
Newfoundland.....	155,751	3.1	155,794	3.1	165,117	3.2
United States.....	1,009,420	19.7	730,658	14.3	755,433	14.6
West Indies.....					2,827	.1
Other countries.....	110,167	2.2	82,772	1.6	59,060	1.1
Total.....	5,113,607	100.0	5,097,949	100.0	5,167,476	100.0

SESSIONAL PAPER No. 26a

The Cape Breton Coal, Iron and Railway Company have been developing their property situated between Loon Lake and Cochran Lake, about twelve miles south-west of Glace Bay. Two slopes have been driven, one of which is now 700 feet and the other 400 feet in length. A third slope was driven upwards from the bottom of the 700 feet slope and parallel to it. The coal seam measured at the face at the bottom of the 700 foot slope, is 62 inches, but it is said to average nearly 6 feet. The Company are contemplating the erection of an up to date plant and are at present doing very extensive work on the surface, laying out a town site, constructing wide streets, etc. The mine is connected with the Sydney and Louisburg Railway, by a branch some two miles and a half long.

At Sydney Mines the collieries of the Nova Scotia Steel and Coal Company were operated; No. 1 colliery during part of the year and No. 3 during all the year. In July all the work was concentrated on No. 3, but No. 1 was, temporarily at least, closed down.

In Inverness county no very noteworthy new developments have taken place during last year. A bore-hole nearly 650 feet deep, has been put down in 1904 at St. Rose, near Chimney-Corner and it was expected that development work would follow, but all work has been discontinued for the present.

In Pictou county the Acadia Coal Company was pushing very actively the sinking of the Allan shaft, in the hope of reaching the main seam. The intention is to make this the main colliery of the company. It is reported that the seam was struck in October, at a depth of almost 1000 feet. It is the intention to extend the shaft to cut all the seams.

New Brunswick.—In New Brunswick, the Grand Lake district was producing as usual during the year. The railway line of the New Brunswick Coal and Railway Company, which taps the coal district, has just passed under the control of the Provincial Government, and it is expected that much will be done to encourage the coal industry of the Grand Lake district.

TABLE 14.

COAL.

NEW BRUNSWICK :—PRODUCTION.

Calendar Year.	Tons.	Value.	Value per ton.
1887.....	10,040	\$ 23,607	\$2 35
1888.....	5,730	11,050	1 93
1889.....	5,673	11,733	2 07
1890.....	7,110	13,850	1 95
1891.....	5,422	11,030	2 03
1892.....	6,768	9,375	1 39
1893.....	6,200	9,837	1 59
1894.....	6,469	10,264	1 59
1895.....	9,500	14,250	1 50
1896.....	7,500	11,250	1 50
1897.....	6,000	9,000	1 50
1898.....	6,160	9,240	1 50
1899.....	10,528	15,792	1 50
1900.....	10,000	15,000	1 50
1901.....	17,630	51,857	2 94
1902.....	18,795	39,680	2 11
1903.....	16,000	40,000	2 50
1904.....	9,112	18,224	2 00
1905.....	29,400	58,800	2 00

Saskatchewan and Alberta.—In the Estevan district, in the south-east corner of the province of Saskatchewan, the Souris Coal Mining Company has built a new tippie 140 feet long, 35 feet high, near Coalfields. When the equipment is completed it is expected that the tippie will handle 1,000 tons per day of 10 hours. The company has laid out the town site of Taylortown in the vicinity of the mine. This company is also operating, under lease, the C.P.R. colliery at Bienfait, about three miles north-east of Coalfields. The Hudson Bay Company is boring extensively in the vicinity on its own land, but the logs of these boreholes are not available.

SESSIONAL PAPER No. 26a

Along the Crow's Nest line of the C.P.R., in Southern Alberta, there has been great activity in coal mining during the past year. Several new collieries have been opened and new coal areas are being developed. In the following brief mention of these, a geographical order will be observed from east to west along the Crow's Nest line.

At Taber, which is 32 miles east of Lethbridge, several coal mining companies are now operating, although the work done so far has been almost altogether of the nature of development. The two largest mines are those of the Taber Coal Mining Company, which controls 9,000 acres, and the Reliance Coal Company, with about 1,500 acres. There are other small mines which supply local wants. Eight analyses of this Taber coal gave the following range of composition: Moisture, 10 to 12 p.c.; volatile, combustible matter, 26 to 31 p.c.; fixed carbon, 46 to 51 p.c.; ash, 7 to 16 p.c.; specific gravity, 1.31 to 1.41 p.c.

In Lethbridge the Alberta Railway and Irrigation Company's mine has been producing very steadily. The workings are being extended to the neighbourhood of the valley of the Bow river, the bed of which is only about 40 feet above them and it is their intention to work out a large section underlying the valley. A very interesting piece of work is now being accomplished at the mine. The old workings, through which all the haulage and hoisting will be done, will be separated from the new underground section by a coal barrier of 200 feet, which will be pierced in only two places. These two tunnels will be lined with masonry and concrete and in each will be installed a system of sluice gates which can be worked from the surface, so that in case of an invasion of water from the Bow river, the old workings could be saved.

At Lundbreck, 39 miles west of McLeod, the Breckenridge and Lund Coal Company is doing a good deal of development work. They are sinking a shaft which was nearly 300 feet deep in September. The plant is at present solely for development but the permanent machinery is ordered and it is expected that the mine will be on a shipping footing before the close of the year.

At Frank, The Canadian American Coal and Coke Company was working the Gebo mine. The seam is here overhanging and is inclined at an angle of 82 degrees. It is worked up the pitch altogether.

The West Canadian Colliery Company has built a new tippie and screening plant at their No. 1 mine, about 4 miles north of Frank and 1 mile south of the old plant at Lille. All the coal is now taken out by the No. 1 tippie, and the screenings are sent to the coking plant at

Lille, where a washer was being built in September. This washer is designed for a capacity of 300 tons per 24 hours, and it is expected that washing the coal will greatly reduce the ash contents of the coke, which at present is rather high. The same company is operating the Bellevue Colliery, which is on the main line of the Crows Nest branch, about 3 miles east of Frank. The extreme work done here has been mainly with a view to development.

The International Coal and Coke Company at Coleman has worked steadily. The company has only been in operation two years, but it has a very up-to-date plant and an output of 900 tons a day. With little addition the plant could handle 1,500 tons.

On the main line of the C.P.R. the Pacific Coal Company has done a great deal of work during the year at their Bankhead colliery, near Banff, Alberta. The coal here is an anthracite admirably suited for domestic purposes. The company has just erected a breaker, a screening and loading plant which will at first handle 1,000 tons a day; this output could on short notice be increased to 2,000 tons. The plant which was not quite completed in September, besides the breaker and screening plant, comprised well equipped and extensive work-shops, power house, etc. When in working order the mine will produce all sizes of domestic coal, egg, stove, pea, etc., and the screenings will be briquetted.

At Canmore, four miles from Banff, the McNeil Coal Company has erected a new tippie and a picking plant; they are putting in a Howe washer to wash all coal under $\frac{1}{2}$ inch in size. The washing plant will have a capacity of 400 tons in ten hours, and is expected to be in running order before the end of the year.

At Anthracite the mine has been completely abandoned, for the present at least, and the greater part of the surface plant removed to the Canmore Colliery.

In the district around Edmonton, several small mines were worked, as in the past, from the banks of the Saskatchewan river. Preparations were being made for greatly increasing the output of several collieries, to keep pace with the demand created by the growth and development of the country.

SESSIONAL PAPER No. 26a

TABLE 15.

COAL.

NORTH-WEST TERRITORIES :—PRODUCTION.

Calendar Year.	Tons.	Value.	Value per ton.
1887.....	74,152	\$ 157,577	\$ 2 13
1888.....	115,124	183,354	1 59
1889.....	97,364	179,640	1 85
1890.....	128,953	198,498	1 54
1891.....	174,131	437,243	2 51
1892.....	184,370	469,930	2 55
1893.....	238,395	598,745	2 51
1894.....	199,991	488,980	2 45
1895.....	185,654	414,064	2 23
1896.....	225,868	606,891	2 69
1897.....	267,163	667,908	2 50
1898.....	340,088	825,220	2 43
1899.....	334,600	811,500	2 43
1900.....	351,950	839,375	2 38
1901.....	391,139	1,008,917	2 58
1902.....	478,129	1,110,521	2 32
1903.....	614,445	1,316,743	2 14
1904.....	786,617	1,591,545	2 02
1905.....	1,046,513	2,167,249	2 07

British Columbia.—In the Crow's Nest field, in British Columbia, the Crow's Nest Pass Coal Company is doing most of its work at Coal Creek and at Michel; there is comparatively little work done at Carbonado, on Morrissey Creek. At the Coal Creek colliery a new steel tippie, 724 feet long, and a screening plant are being erected to handle the coal from all the mines on both sides of the valley. The tippie is designed to handle an output of 4,000 tons in ten hours. At the Michel colliery, 24 miles north of Fernie, a new haulage system by compressed air locomotives is being put in. The tippie of the Michel colliery can handle 2,000 tons in ten hours.

In the Nanaimo district the Western Fuel Company are hoisting from No. 1 shaft at Nanaimo and from the Northfield or Departure shaft. At this last colliery they have just completed a modern tippie and vessel-loading plant. A strike which lasted from May to October, during which time the collieries were closed down, will rather lower the figure of production for the year.

The Wellington Colliery Company worked their extension colliery all the year. Dr. H. S. Poole has been charged by the Geological Survey to study the coal fields of Vancouver Island during the past summer, and in the Summary Report of the director will be found a short account of his investigations, both in the Nanaimo and in the Comox fields.

GEOLOGICAL SURVEY OF CANADA

6-7 EDWARD VII., A. 1907

TABLE 16.

COAL.

BRITISH COLUMBIA :—PRODUCTION.

Calendar Year.	Output Tons, 2,240 lbs.	Home Consumption, Tons, 2,240 lbs.	Sold for Export, Tons, 2,240 lbs. +	PRODUCTION.*		Price per ton, 2,240 lbs.	Value.
				Tons, 2,240 lbs.	Tons, 2,000 lbs.		
1836-52..	10,000				11,200	4 00	40,000
1852-59..	25,398				28,446	4 00	101,592
1859-60..	1,989				2,228	4 00	7,956
1860.....	14,247				15,957	4 00	56,988
1861.....	13,774				15,427	4 00	55,096
1862.....	18,118				20,292	4 00	72,472
1863.....	21,345				23,906	4 00	85,380
1864.....	28,632				32,068	4 00	114,528
1865.....	32,819				36,757	4 00	131,276
1866.....	25,115				28,129	4 00	100,460
1867.....	31,239				34,988	4 00	124,956
1868.....	44,005				49,286	4 00	176,020
1869.....	35,802				40,098	4 00	143,208
1870.....	29,843				33,424	4 00	119,372
1871-2-3..	148,459				166,274	4 00	593,836
1874.....	81,547	25,023	56,038	81,061	90,788	3 00	243,183
1875.....	110,145	31,252	66,392	97,644	109,361	3 00	292,932
1876.....	139,192	17,856	+122,329	140,185	157,007	3 00	420,555
1877.....	154,052	24,311	115,381	139,692	156,455	3 00	419,076
1878.....	170,846	26,166	164,682	190,848	213,750	3 00	572,544
1879.....	241,301	40,294	192,096	232,390	260,277	3 00	697,170
1880.....	267,595	46,513	225,849	272,362	305,045	3 00	817,086
1881.....	228,357	40,191	189,323	229,544	257,056	3 00	688,542
1882.....	282,139	56,161	232,411	288,572	323,201	3 00	865,716
1883.....	213,299	64,786	149,567	214,353	240,075	3 00	643,059
1884.....	394,070	87,388	306,478	393,866	441,130	3 00	1,181,593
1885.....	365,596	95,227	237,797	333,024	372,987	3 00	999,072
1886.....	326,636	95,987	249,205	335,192	375,415	3 00	1,005,576
1887.....	413,360	99,216	334,839	434,055	486,142	3 00	1,302,165
1888.....	489,301	115,953	365,714	481,667	539,467	3 00	1,445,001
1889.....	579,830	124,574	443,675	568,249	636,439	3 00	1,704,747
1890.....	678,140	177,075	508,270	685,345	767,586	3 00	2,056,035
1891.....	1,029,097	202,697	806,479	1,009,176	1,130,277	3 00	3,027,528
1892.....	826,335	196,223	640,379	836,802	937,218	3 00	2,510,406
1893.....	978,294	207,851	768,917	976,768	1,093,980	3 00	2,930,304
1894.....	1,012,953	165,776	827,642	993,418	1,112,628	3 00	2,980,254
1895.....	939,654	188,349	756,334	944,683	1,058,045	3 00	2,834,049
1896.....	894,882	261,984	634,238	896,222	1,003,769	3 00	2,688,666
1897.....	892,296	290,310	619,860	910,170	1,019,390	3 00	2,730,510
1898.....	1,136,485	375,423	752,863	1,128,286	1,263,680	3 00	3,384,858
1899.....	1,306,324	526,058	751,711	1,277,769	1,431,101	3 00	3,833,307
1900.....	1,590,178	685,667	914,184	1,599,851	1,791,833	3 00	4,799,553
1901.....	1,691,557	799,666	914,163	1,713,829	1,919,488	3 00	5,141,487
1902.....	1,641,626	837,871	776,809	1,614,680	1,808,441	3 00	4,844,040
1903.....	1,450,663	947,499	549,449	1,496,948	1,676,581	3 00	4,490,844
1904.....	1,685,698	1,129,465	533,593	1,663,058	1,862,625	3 00	4,989,174
1905.....	1,736,696	1,089,667	647,343	1,737,010	1,945,452	3 00	5,211,030

*This production is obtained by adding 'Home Consumption' and 'Sold for Export,' +52,935 of this amount was exported as sales without the division into the 'Home Consumption' and 'Sold for Export.'

†The figures in the 'Sold for Export' column do not agree as they should with those given in Table 5, the only explanation being that the data in the two cases are from different sources, and it has not been possible to find out the cause of the difference.

‡Two months only.

SESSIONAL PAPER No. 26a

SALES AND OUTPUT FOR YEAR. Tons of 2240 lbs.				
	Tons.	Cwt.	Tons.	Cwt.
Sold for consumption in Canada.....	513,313			
" export to U.S.A.....	647,343			
" " to other countries.....				
Total sales.....			1,160,656	
Used in making coke.....	398,896			
Used under colliery boilers, &c.....	177,458			
Total for colliery use.....			576,354	
			1,737,010	
Stock on hand first of year.....	3,528			
" " last of year.....	3,214			
Difference taken from stock during the year.....			314	
Output of collieries for year.....			1,736,696	

NUMBER OF HANDS EMPLOYED, DAILY WAGES PAID, &c.

CHARACTER OF LABOUR.	UNDERGROUND.		ABOVE GROUND.		TOTAL.	
	No. of employees	Average daily wage	No. of employees	Average daily wage	No. of employees	Average daily wage
Supervision and clerical assistance.....	83	\$ 7 62	57	\$ 4 50	140	\$ 6 06
Whites—						
Miners.....	1,445	4 70			1,445	4 70
Miners' helpers.....	507	2 25			507	2 25
Labourers.....	624	2 75	368	2 60	992	2 67
Mechanics and skilled lab....	75	2 87	311	3 60	386	3 23
Boys.....	140	1 50	53	1 40	193	1 45
Japanese.....	102	1 37	18	1 22	120	1 24
Chinese.....	151	1 37	473	1 60	624	1 48
Totals.....	3,127		1,280		4,407	

COKE.

The total production of coke for 1905, to which contributed the three provinces of Nova Scotia, British Columbia and Alberta, shows a marked increase over 1904. From 554,083 tons in 1904 it attained 700,488 tons in 1905. Each of the three provinces have a larger production than in the previous year, but Nova Scotia and Alberta are mainly responsible for the greater tonnage.

TABLE 1.

COKE.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Value. per Ton.
1886.....	35,396	\$101,940	\$2.88
1887.....	40,428	135,951	3.36
1888.....	45,373	134,181	2.96
1889.....	54,539	155,043	2.84
1890.....	56,450	166,298	2.95
1891.....	57,084	175,592	3.08
1892.....	56,135	160,249	2.85
1893.....	61,078	161,790	2.65
1894.....	58,044	148,551	2.56
1895.....	53,356	143,047	2.68
1896.....	49,619	110,257	2.22
1897.....	60,686	176,457	2.91
1898.....	87,600	286,000	3.26
1899.....	100,820	350,022	3.47
1900.....	157,134	649,140	4.13
1901.....	365,531	1,228,225	3.36
1902.....	502,043	1,519,185	3.03
1903.....	561,318	1,734,404	3.09
1904.....	554,083	2,032,048	3.66
1905.....	700,488	2,436,211	3.48

The total increase in tonnage is therefore 146,405 over 1904, which is divided up as follows among the contributing provinces: Nova Scotia an increase of 110,439 tons, Alberta 23,882 tons and British Columbia 12,884 tons.

TABLE 2.
COKE.
PRODUCTION OF COKE BY PROVINCES.

Calendar Year.	Nova Scotia.		British Columbia.		Alberta.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
1897.....	41,532	90,950	19,154	85,507	.....	.....
1898.....	48,400	111,000	39,200	175,000	.....	.....
1899.....	62,459	178,767	38,361	171,255	.....	.....
1900.....	61,767	223,395	95,367	425,745	.....	.....
1901.....	222,694	590,560	142,837	637,665	.....	.....
1902.....	363,330	899,930	138,713	619,255	.....	.....
1903.....	371,745	888,094	189,573	846,310	.....	.....
1904.....	275,927	805,022	257,172	1,148,090	20,984	78,936
1905.....	386,366	1,054,712	269,256	1,202,035	44,866	179,464

Nova Scotia.—The coke production of Nova Scotia is practically all used in the manufacture of iron and steel in the province itself. The total production this year shows a marked increase, for which the new coking plant of the Nova Scotia Steel and Coal Company is to be partly credited. Almost 90 per cent of the Nova Scotian coke is manufactured in by-product ovens. The two largest coking plants in the province are the plant of the Dominion Iron and Steel Co., at Sydney, which consists of 10 batteries of 50 ovens each, or 500 ovens, of the Otto-Hoffman by-product type, and the plant of the Nova Scotia Steel and Coal Co., at Sydney Mines, which comprises 120 ovens of the Bernard type, and 30 Bauer ovens.

Alberta.—This province is becoming quite a factor in the production of coke. In 1904 only 20,197 tons were produced, whereas in 1905 this figure had more than doubled, having reached 44,866 tons. This is manufactured altogether from the coal of the Blairmore-Frank field, in the Crow's Nest field, on the Crow's Nest branch of the C.P.R.

The West Canadian Collieries, Limited, have a battery of 50 ovens of the Bernard type, at Lille. These are the only mechanical or by-product ovens in the west. They are of the same pattern as those recently erected (4 batteries of 30 ovens each) for the Nova Scotia Steel and Coal Company at Sydney Mines, Nova Scotia. All the other ovens in operation in the province are of the bee-hive pattern. The production of coke of Alberta is entirely consumed in Canada, mainly in the smelting centres of British Columbia.

British Columbia.—There is only a very small increase, of slightly over 12,000 tons, to record this year in the production of coke in British Columbia. In 1904, the total production amounted to 257,172 tons, whereas in 1905 this was raised to 269,266 tons. Of this quantity about 45 per cent is used locally, in the lead and copper smelters of the province, and the balance of 55 per cent is exported to the United States. All the coke ovens of British Columbia, on the mainland as well as on Vancouver Island, are of bee-hive pattern.

Below are given statistical tables of the imports and exports of coke.

TABLE 3.
COKE.
EXPORTS OF COKE.

Calendar Year.	Tons.	Value.
		\$
1897	2,987	6,078
1898	3,774	8,394
1899	5,557	18,726
1900	41,529	131,278
1901	57,505	176,990
1902	62,568	180,920
1903	32,608	135,957
1904	102,463	345,031
1905	116,071	509,908

TABLE 4.
COKE.
IMPORTS OF OVEN COKE.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1880	3,837	19,353	1893	41,821	156,277
1881	5,492	26,123	1894	42,864	176,996
1882	8,157	36,670	1895	43,235	149,434
1883	8,943	38,588	1896	61,612	203,826
1884	11,207	44,518	1897	83,830	267,540
1885	11,564	41,391	1898	135,060	347,040
1886	11,858	39,756	1899	141,284	362,826
1887	15,110	56,222	1900	187,878	506,839
1888	25,487	102,334	1901	308,786	680,138
1889	29,557	91,902	1902	267,142	842,815
1890	36,564	133,344	1903	256,723	1,222,756
1891	38,533	177,605	1904	221,050	765,123
1892	43,499	194,429	1905	371,593	807,842
			1905.. Duty free.		

The exports are altogether from British Columbia to the United States, and the larger proportion of these exports are to the smelting centres, immediately south of the 49th parallel. The largest item in the imports consists of the fuel supply of the various blast furnaces of Ontario.

CHROMITE.

Good progress has been made in the mining and treatment of chromite ores in the Eastern Townships of the Province of Quebec, the only district in Canada from which these ores are at present obtained. The total shipments in 1905 were approximately 8,575 tons valued at \$93,301 as compared with 6,074 tons in 1904 and 3,509 tons in 1903.

Considerable improvements have been made in the methods of mining and concentrating the ores. The treatment is the same throughout the district. The ore is sorted as it comes from the pit and all running over 40 per cent sesquioxide of chromium is graded crude No. 1 (over 47 per cent.) and No. 2 (between 40 per cent. and 47 per cent.) The waste or ore running less than 40 per cent. Cr_2O_3 is sent to the mills for concentration. Here it is crushed in jaw crushers and under stamps and concentrated in Wilfley tables. Two grades of concentrates are produced and are finding a ready market chiefly in the United States. The high grade concentrates running 50 to 54 per cent. Cr_2O_3 are competing successfully with the high grade ores of New Caledonia.

The largest operating company during the year was the Black Lake Chrome and Asbestos Company. This company remodelled its plant during the year. A mill building containing a 30 stamp mill was erected on the line of the Quebec Central Railway near Black Lake. A tram line operated by cable was built connecting the two shafts at No. 1 pit with the mill and an air compressor installed at the pit. All of this plant is operated by electric power obtained from the St. Francis Hydraulic Company,

Small shipments were also made by the American Chrome Company and the Canadian Chrome Company.

Statistics of production and exports are given in the following tables :—

TABLE 1.

CHROMITE.

ANNUAL PRODUCTION.

Calendar Year.	Tons. (2,000 lbs.)	Average price per ton.	Value.
		\$ cts	\$
1886.....	* 60	15 75	945
1887.....	38	15 00	570
1888 to 1893.....	no output		
1894.....	1,000	20 00	* 20,000
1895.....	3,177	13 00	41,300
1896.....	2,342	11 53	27,004
1897.....	2,637	12 31	32,474
1898.....	* 2,021	12 00	24,252
1899.....	2,010	10 86	21,842
1900.....	2,335	11 56	27,000
1901.....	1,274	13 14	16,744
1902.....	900	14 44	13,000
1903.....	3,509	14 57	51,129
1904.....	6,074	11 05	67,146
1905.....	8,575	10 88	93,301

* Railway shipments.

TABLE 2.

CHROMITE.

EXPORTS.

Calendar Year.	Tons.	Value.
1895.....	2,908	\$ 42,236
1896.....	2,466	31,411
1897.....	2,106	26,254
1898.....	1,683	20,783
1899.....	1,509	19,876
1900.....	368	8,259
1901.....	2,259	25,444
1902.....	740	7,535
1903.....	1,013	20,524
1904.....	3,338	60,336
1905.....	5,042	45,072

GRAPHITE.

With the exception of a small amount mined near Havelock, N.B., for use in paint-making the graphite production in Canada in 1905 was all obtained from the Black Donald mine, Brougham tp., Renfrew county, and a mine in North Elmsley tp., Lanark county, Ont., operated by the Globe Refining Company of Ottawa. The total quantity of ore mined during the year was 2,138 tons of which 1,694 tons were milled; 444 tons of ore were sold crude, valued at \$8,160 while 97 tons of milled products were disposed of, valued at \$8,575 the total sales being 541 tons valued at \$16,735.

No information was received of any operations in the graphite deposits at Buckingham or at Grenville, Que.

Statistics of production, exports and imports are given in Tables 1, 2, and 3 following.

TABLE 1.
GRAPHITE.
ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.....	500	\$4,000	1896.....	139	9,455
1887.....	300	2,400	1897.....	436	16,240
1888.....	150	1,200	1898.....		13,698
1889.....	242	3,160	1899.....	1,130	24,179
1890.....	175	5,200	1900.....	1,922	31,040
1891.....	260	1,560	1901.....	2,210	38,780
1892.....	167	3,763	1902.....	1,095	28,300
1893.....	nil.	nil.	1903.....	728	23,745
1894*.....	3	223	1904.....	452	11,760
1895.....	220	\$ 6,150	1905.....	541	16,735

* Exports.

TABLE 2.
GRAPHITE.
EXPORTS.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$ 3,586	1896.....	\$ 9,480
1887.....	3,017	1897.....	4,325
1888.....	1,080	1898.....	13,098
1889.....	538	1899.....	22,490
1890.....	1,529	1900.....	46,197
1891.....	72	1901.....	35,102
1892.....	3,952	1902.....	24,839
1893.....	38	1903.....	43,642
1894.....	223	1904.....	16,567
1895.....	4,833		
1905 { Crude.....		Cwt.	
{ Manufactures of.....		5,088	\$ 7,596
			518
			\$ 8,114

TABLE 3.

GRAPHITE.

IMPORTS OF RAW AND MANUFACTURED GRAPHITE.

Fiscal Year.	Plumbago.	Manufactures of plumbago.	
		Black-lead.	Other Manufactures.
1880.....	\$1,677	\$18,055	\$2,738
1881.....	2,479	26,544	1,202
1882.....	1,028	25,132	2,181
1883.....	3,147	21,151	2,141
1884.....	2,891	24,002	2,152
1885.....	3,729	24,487	2,805
1886.....	5,522	23,211	1,408
1887.....	4,020	25,766	2,830
1888.....	3,802	7,824	22,604
1889.....	3,546	11,852	21,789
1890.....	3,441	10,276	26,605
1891.....	7,217	8,292	26,201
1892.....	2,988	13,560	23,085
1893.....	3,293	16,595	23,051
1894.....	2,177	17,614	16,686
1895.....	2,586	13,922	21,988
1896.....	2,865	18,434	19,497
1897.....	1,406	17,863	20,674
1898.....	1,862	19,638	32,653
1899.....	4,979	21,334	36,490
1900.....	4,437	22,078	38,440
1901.....	2,357	25,646	49,890
1902.....	3,649	20,467	43,656
1903.....	2,870	22,559	47,117
1904.....	1,802	26,053	41,510
1905 {	Duty.		
	Plumbago, not ground, &c. 10 p.c.	\$2,499	
	Black-lead..... 25 "		\$30,743
	Plumbago, ground and manufactures of N.E.S.. 25 "		\$13,192
Crucibles, clay or plumbago.	Free.		31,353
	Totals, 1905.....	\$2,499	\$30,743
			\$44,545

GYPSUM.

The total sales of crude, ground and calcined gypsum in 1905 amounted to 442,158 short tons, valued at \$586,168, compared with 345,961 tons valued at \$373,474, an increase of \$96,197 tons or nearly 28 per cent in quantity and \$211,694 or over 56 per cent in value.

The total quantity of gypsum mined during the year was 443,569 short tons of which 26,855 tons were calcined, making Plaster of Paris, hard wall plaster, etc.

The sales of gypsum products for the year in detail, were as follows:—

	Tons.	Value.
Crude gypsum	412,155	\$ 409,146
Ground gypsum	3,255	8,779
Plaster of Paris, wall plaster, etc.....	26,748	168,243
	442,158	\$586,168

Statistics of production, exports and imports are given in the following tables.

TABLE 1.

GYPSUM.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Average price per ton.
1886.....	162,000	\$178,742	\$ 1.10
1887.....	154,008	157,277	1.02
1888.....	175,887	179,393	1.01
1889.....	213,273	205,108	0.96
1890.....	226,509	194,033	0.86
1891.....	203,605	206,251	1.01
1892.....	241,048	241,127	1.00
1893.....	192,568	196,150	1.02
1894.....	223,631	202,031	0.90
1895.....	226,178	202,608	0.89
1896.....	207,032	178,061	0.86
1897.....	239,691	244,531	1.02
1898.....	219,256	232,515	1.06
1899.....	244,566	257,329	1.05
1900.....	252,101	259,009	1.02
1901.....	293,799	340,148	1.16
1902.....	333,599	379,479	1.14
1903.....	314,489	388,459	1.24
1904.....	345,961	373,474	1.08
1905 {	Crude gypsum.....	412,155	409,146
	Ground gypsum.....	3,255	8,779
	Plaster of Paris and wall plaster	26,748	168,243
	Total	442,158	586,168
			1.32

TABLE 2.

GYPSUM.

ANNUAL PRODUCTION BY PROVINCES.

CALENDAR YEAR.	NOVA SCOTIA.		NEW BRUNSWICK.		ONTARIO.		MANITOBA.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1887	116,346	116,346	29,102	29,216	8,560	11,715		
1888	124,818	120,429	44,369	48,764	6,700	10,200		
1889	165,025	142,850	40,866	49,130	7,382	13,128		
1890	181,285	154,972	39,024	30,986	6,200	8,075		
1891	161,934	153,955	36,011	33,996	5,660	18,300		
1892	197,019	170,021	39,709	65,707	4,320	5,399		
1893	152,754	144,111	36,916	41,846	2,898	10,193		
1894	168,300	147,644	52,962	48,200	2,369	6,187		
1895	156,809	133,929	66,949	63,839	2,420	4,840		
1896	136,590	111,251	67,137	59,024	3,305	7,786		
1897	155,572	121,754	82,658	118,116	1,461	4,661		
1898	132,086	106,610	86,083	121,704	1,087	4,201		
1899	126,754	102,055	116,792	151,296	1,020	3,978		
1900	138,712	108,828	112,294	145,850	1,095	4,331		
1901	170,100	136,947	121,595	189,709	1,504	5,692	600	7,800
1902	206,087	181,425	124,041	170,153	1,917	7,699	1,554	20,202
1903	189,427	173,881	119,182	172,080	2,720	21,988	3,160	20,510
1904	218,580	153,600	120,991	187,524	2,390	18,350	4,000	14,000
1905	272,252	298,248	163,553	232,586	1,853	23,834	4,500	31,500

SESSIONAL PAPER No. 26a

TABLE 3.

GYPSUM.

EXPORTS OF CRUDE GYPSUM.

Calendar Year.	NOVA SCOTIA.		NEW BRUNSWICK.		ONTARIO.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1874	67,830	68,164					67,830	68,164
1875	86,065	86,193	5,420	5,420			91,485	91,613
1876	87,720	87,590	4,925	6,616	120	180	92,765	94,386
1877	106,950	93,867	5,030	5,030			111,980	98,897
1878	88,631	76,695	16,335	16,435	489	675	105,455	93,805
1879	95,623	71,353	8,791	8,791	579	720	104,993	80,864
1880	125,685	111,833	10,375	10,987	875	1,240	136,935	124,060
1881	110,303	100,284	10,310	15,025	657	1,040	121,270	116,349
1882	133,426	121,070	15,597	24,581	1,249	1,946	150,272	147,597
1883	145,448	132,834	20,242	35,557	462	837	166,152	169,228
1884	107,653	100,446	21,800	32,751	688	1,254	130,141	134,451
1885	81,887	77,898	15,140	27,730	525	787	97,552	106,415
1886	118,985	114,116	23,498	40,559	350	538	142,833	155,213
1887	112,557	106,910	19,942	39,295	225	337	132,724	146,542
1888	124,818	120,429	20	50	670	910	125,508	121,389
1889	146,204	142,850	31,495	50,862	483	692	178,182	194,404
1890	145,452	139,707	30,034	52,291	205	256	175,691	192,254
1891	143,770	140,438	27,536	41,350	5	7	171,311	181,795
1892	162,372	157,463	27,488	43,623			189,860	201,086
1893	132,131	122,556	30,061	36,706			162,192	159,262
1894	119,569	111,586	40,843	46,538			160,412	158,124
1895	133,369	125,651	56,117	67,593			189,486	193,244
1896	116,331	109,054	64,946	77,535			181,277	186,589
1897	122,984	116,665	66,222	80,485			189,206	197,150
1898	99,215	93,474	70,399	81,433			169,614	174,907
1899	104,795	99,984	96,831	108,094	* $\frac{1}{2}$	12	201,626	208,090
1900							188,262	201,912
1901							236,247	231,594
1902							289,600	295,215
1903							287,496	311,580
1904							298,211	316,436
1905							359,246	388,474

*Exported from British Columbia.

GEOLOGICAL SURVEY OF CANADA

6-7 EDWARD VII., A. 1907

TABLE 4.
GYPSUM.
EXPORTS OF GROUND GYPSUM.

Calendar Year.	Nova Scotia.	New Brunswick.	Ontario.	Total.
	\$	\$	\$	\$
1890.....				105
1891.....				588
1892.....				20,255
1893.....				22,132
1894.....	2,124	17,930		20,054
1895.....	3,364	18,827	42	22,233
1896.....	1,270	19,246	751	21,267
1897.....	1,655	5,024	84	6,763
1898.....	1,548	4,900		6,448
1899.....	205	7,898	20	8,123
1900.....				19,834
1901.....				15,337
1902.....				5,101
1903.....				12,457
1904.....				2,333
1905.....				2,673

TABLE 5.
GYPSUM.
IMPORTS OF GYPSUM, ETC.

Fiscal Year.	Crude Gypsum.		Ground Gypsum.		Plaster of Paris.	
	Tons.	Value.	Pounds.	Value.	Pounds.	Value.
1880.....	1,854	\$3,203	1,606,578	\$ 5,948	667,676	\$ 2,376
1881.....	1,731	3,442	1,544,714	4,676	574,006	2,864
1882.....	2,132	3,761	759,460	2,576	751,147	4,184
1883.....	1,384	3,001	1,017,905	2,579	1,448,650	7,867
1884.....		3,416	687,432	1,936	782,920	5,226
1885.....	1,353	2,354	461,400	1,177	689,521	4,809
1886.....	1,870	2,429	224,119	675	820,273	5,463
1887.....	1,557	2,492	13,266	73	594,146	4,342
1888.....	1,236	2,193	106,068	558	942,338	6,662
1889.....	1,360	2,472	74,390	372	1,173,996	8,513
1890.....	1,050	1,928	434,400	2,136	693,435	6,004
1891.....	376	640	36,500	215	1,035,605	8,412
1892.....	626	1,182	310,250	2,149	1,166,200	5,595
1893.....	496	1,014	140,830	442	552,130	3,143
1894.....		1,660	23,270	198	422,700	2,386
1895.....	603	960	20,700	88	259,200	1,619
1896.....	1,045	848	64,500	198	297,000	2,000
1897.....		772	45,000	123	969,900	4,489
1898.....	1,147	1,742	35,700	293	329,600	2,025
1899.....	325	692	33,900	338	496,300	3,120
1900.....	77	958	6,300	69	849,100	6,492
1901.....	286	1,125	65,400	1,097	502,200	3,978
1902.....	541	1,697	56,700	249	475,300	2,641
1903.....	1,076	2,187	68,700	228	630,800	3,599
1904.....	249	663	106,800	559	625,100	2,885
1905.....	2,344	7,386	*2,255,700	2,681	7,924,100	37,643

*Equivalent to 7,519 barrels.

Crude gypsum, duty free. Ground gypsum, duty 15%. Plaster of Paris, duty 12½c. per 100 lbs.

MANGANESE.

There has been but little manganese mining in Canada during the past few years. During 1905, the dumps on the property of the Tenny Cape Manganese Co., at Tennycap, Nova Scotia, were worked over by tributers. No direct returns of production were received but exports were reported as 22 tons valued at \$1,720 and this figure has been taken as representing the production.

TABLE 1.

MANGANESE.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Value per ton.
1886.....	1,789	\$41,499	\$23.20
1887.....	1,245	43,658	35.07
1888.....	1,801	47,944	26.62
1889.....	1,455	32,737	22.50
1890.....	1,328	32,550	24.51
1891.....	255	6,694	26.25
1892.....	115	10,250	89.13
1893.....	213	14,578	68.44
1894.....	74	4,180	56.49
1895.....	125	8,464	67.71
1896*.....	123½	3,975	32.19
1897*.....	15¼	1,166	76.46
1898.....	50	1,600	32.00
1899.....	1,581	20,004	12.65
1900.....	30	1,800	60.00
1901*.....	440	4,820	10.95
1902*.....	172	4,062	23.62
1903.....	91	2,775	30.49
1904.....	66	2,740	41.51
1905*.....	22	1,720	78.18

* Exports.

GEOLOGICAL SURVEY OF CANADA

6-7 EDWARD VII., A. 1907

TABLE 2.
MANGANESE.
EXPORT OF MANGANESE ORE.

CALENDAR YEAR.	NOVA SCOTIA.		NEW BRUNSWICK.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
1873.....			1,031	\$20,192	1,031	\$20,192
1874.....	6	\$ 12	776	16,961	782	16,973
1875.....		200	194	5,314	203	5,514
1876.....	21	723	391	7,316	412	8,039
1877.....	106	3,699	785	12,210	891	15,909
1878.....	106	4,889	520	5,971	626	10,860
1879.....	154	7,420	1,732	20,016	1,886	27,436
1880.....	79	3,090	2,100	31,707	2,179	34,797
1881.....	200	18,022	1,504	22,532	1,704	40,554
1882.....	123	11,520	771	14,227	894	25,747
1883.....	313	8,635	1,013	16,708	1,326	25,343
1884.....	134	11,054	469	9,035	603	20,089
1885.....	77	5,054	1,607	29,595	1,684	34,649
1886.....	(a) 441	30,854	1,377	27,484	(a) 1,818	58,338
1887.....	578	14,240	837	20,562	1,415	34,802
1888.....	87	5,759	1,094	16,073	1,181	21,832
1889.....	59	3,024	1,377	26,326	1,436	29,350
1890.....	177	2,583	1,729	34,248	1,906	36,831
1891.....	22	563	233	6,131	255	6,694
1892.....	84	6,180	59	2,025	143	8,205
1893.....	123	12,409	10	112	133	12,521
1894.....	11	720	45	2,400	56	3,120
1895.....	108	6,348	³ / ₁₀	3	108 ³ / ₁₀	6,351
1896.....	123 ³ / ₁₀	3,975			123 ³ / ₁₀	3,975
1897.....	154	1,166			154	1,166
1898.....	11	325			11	325
1899.....	67	2,328	3	82	70	2,410
1900.....					34	1,720
1901.....					440	4,820
1902.....					172	4,062
1903.....					135	1,889
1904.....					123	2,706
1905.....					22	1,720

(a) 250 tons from Cornwallis should more correctly be classed under the heading of mineral pigments.

TABLE 3.
MANGANESE.
IMPORTS: OXIDE OF MANGANESE.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1884.....	3,989	\$ 258	1895.....	64,151	\$2,781
1885.....	36,778	1,794	1896.....	108,590	4,075
1886.....	44,967	1,753	1897.....	70,663	2,741
1887.....	59,655	2,933	1898.....	130,456	5,047
1888.....	65,014	3,022	1899.....	141,356	5,539
1889.....	52,241	2,182	1900.....	126,725	4,155
1890.....	67,452	3,192	1901.....	272,134	8,176
1891.....	92,087	3,743	1902.....	476,331	5,360
1892.....	76,097	3,530	1903.....	279,611	8,051
1893.....	94,116	3,696	1904.....	275,696	7,051
1894.....	101,863	4,522	1905 Duty free...	235,289	6,832

SESSIONAL PAPER No. 26a

MICA.

According to returns received, the production of mica in Canada in 1905, was as follows.—

	Value.
Quebec.....	\$ 109,672
Ontario.....	68,563
	<hr/> \$ 178,235

The demand for mica has considerably improved and higher prices have been realized, while the smaller sizes, or mica cutting 1 x 2 inches, have found a ready market.

The greater part of the Canadian production is exported to the United States as shown in Table 3 though larger shipments are now being made to European markets.

Statistics of production and exports are shown in Tables 1 and 2.

TABLE 1.

MICA.

ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$ 29,008	1896.....	\$60,000
1887.....	29,816	1897.....	76,000
1888.....	30,207	1898.....	118,375
1889.....	28,718	1899.....	163,000
1890.....	68,074	1900.....	166,000
1891.....	71,510	1901.....	160,000
1892.....	104,745	1902.....	135,904
1893.....	75,719	1903.....	177,857
1894.....	45,581	1904.....	160,777
1895.....	65,000	1905.....	178,235

TABLE 2.

MICA.

EXPORTS.

Calendar Year.	Value.	Calendar Year.	Value.
1887.....	\$ 3,480	1897.....	\$ 69,101
1888.....	23,563	1898.....	110,507
1889.....	30,597	1899.....	153,002
1890.....	22,468	1900.....	146,750
1891.....	37,590	1901.....	152,553
1892.....	86,562	1902.....	(a) 391,812
1893.....	70,081	1903.....	196,020
1894.....	38,971	1904.....	198,482
1895.....	48,525	1905.....	179,049
1896.....	47,756		

(a) Probably includes some material manufactured from mica.

TABLE 3.

MICA.

*IMPORTS OF MICA INTO THE UNITED STATES FROM CANADA, YEARS ENDING JUNE 30.

Fiscal Year.	Pounds.	Value.
1895.....	546,905	\$ 39,637
1896.....	570,750	53,719
1897.....	404,080	53,399
1898.....	465,779	53,854
1899.....	1,024,098	131,310
1900.....	1,097,067	136,981
1901.....	967,904	161,741
1902.....	854,167	184,287
1903.....	834,035	196,456
1904.....	573,035	137,191
1905.....	506,917	121,560

* The Foreign Commerce and Navigation of the United States.

MINERAL PIGMENTS.

The production of ochres and barytes only are included under this heading.

Ochres.—The production of ochres in 1905 was 5,105 tons valued at \$34,675 and was all derived from deposits near Three Rivers, Champlain county, Quebec. This output was not all used in the manufacture of paint, in fact the greater proportion is represented by crude iron oxide which is shipped to many cities in Canada and exported to the United States and used in the purification of gas.

The firms mining ochres are :—

- Canada Paint Co., Montreal, Que.
- Champlain Oxide Co., Three Rivers, Que.
- Thos. H. Argall, Three Rivers, Que.
- Ontario Mineral Paint Works, Campbellville, Ont.

TABLE 1.
MINERAL PIGMENTS.
ANNUAL PRODUCTION OF OCHRES.

Calendar Year.	Tons.	Value.
1886.....	350	\$ 2,350
1887.....	485	3,733
1888.....	397	7,900
1889.....	794	15,280
1890.....	275	5,125
1891.....	900	17,750
1892.....	390	5,800
1893.....	1,070	17,710
1894.....	611	8,690
1895.....	1,339	14,600
1896.....	2,362	16,045
1897.....	3,905	23,560
1898.....	2,226	17,450
1899.....	3,919	20,000
1900.....	1,966	15,398
1901.....	2,233	16,735
1902.....	4,955	30,495
1903.....	6,266	32,760
1904.....	3,925	24,995
1905.....	5,105	34,675

TABLE 2.
MINERAL PIGMENTS.
IMPORTS OF OCHRES.

Fiscal Year.		Pounds.	Value.
1880.....		571,454	\$ 6,544
1881.....		677,115	8,972
1882.....		731,526	8,202
1883.....		898,376	10,375
1884.....		533,416	6,398
1885.....		1,119,177	12,782
1886.....		1,100,243	12,267
1887.....		1,460,128	17,067
1888.....		1,725,460	17,664
1889.....		1,342,783	12,994
1890.....		1,394,811	14,066
1891.....		1,528,696	20,550
1892.....		1,708,645	22,908
1893.....		1,968,645	23,134
1894.....		1,358,326	18,951
1895.....		793,258	12,048
1896.....		1,159,494	16,954
1897.....		1,504,044	18,504
1898.....		2,126,592	26,307
1899.....		2,444,698	31,092
1900.....		2,474,537	32,017
1901.....		2,092,067	27,267
1902.....		2,530,743	33,909
1903.....		3,215,346	42,243
1904.....		2,767,580	36,636
1905	Ochres and ochrey earths and raw siennas.....	Duty.	
		20 p. c.	1,269,887
	Oxides, dry fillers, fire-proofs, umbers and burnt siennas N.E.S.....	25 "	1,852,803
	Total, 1905.....		3,122,690
			\$35,887

TABLE 3.
MINERAL PIGMENTS.
EXPORTS OF MINERAL PIGMENTS, IRON OXIDES, ETC.

Calendar Year.	Tons.	Value.
1897.....	512	\$7,706
1898.....	283	4,227
1899.....	308	5,408
1900.....	651	7,154
1901.....	401	8,233
1902.....	352	6,182
1903.....	676	12,770
1904.....	416	7,260
1905.....	353	7,704

SESSIONAL PAPER No. 26a

Barytes.—The production of barytes in 1905 was 3,360 tons valued at \$7,500 and was all produced at Lake Ainslie in Cape Breton. The product was shipped to New York and to Montreal.

The Ainslie Mining and Railway Company of Halifax with branches in New York and Montreal have begun the exploitation of the barytes deposits at East Lake Ainslie, C.B., on a much larger scale than has hitherto been attempted.

The Company's charter includes the right to build a railway north to Cheticamp and south to the Intercolonial. At present the ore is carried across the lake a distance of about eight miles in a boat especially constructed for the purpose and thence by way of the Inverness Railway & Coal Co's. line to Port Hastings. Considerable expenditure has already been made on necessary connecting railways, tramways, wharves, &c.

TABLE 4.

MINERAL PIGMENTS.

ANNUAL PRODUCTION OF BARYTES.

Calendar Year.	Tons.	Value.
1885.	300	\$ 1,500
1886.	3,864	19,270
1887.	400	2,400
1888.	1,100	3,850
1889.		
1890.	1,842	7,543
1891.		
1892.	315	1,260
1893.		
1894.	1,081	2,830
1895.		
1896.	145	715
1897.	571	3,060
1898.	1,125	5,533
1899.	720	4,402
1900.	1,337	7,605
1901.	653	3,842
1902.	1,096	3,957
1903.	1,163	3,931
1904.	1,382	3,702
1905.	3,360	7,500

TABLE 5.
MINERAL PIGMENTS.
IMPORTS OF BARYTES.

Fiscal Year.	Cwt.	Value.
1880.....	2,230	\$ 1,525
1881.....	3,740	1,011
1882.....	497	303
1883.....	.....	185
1884.....	.....	229
1885.....	7	14
1886.....	.....	62
1887.....	379	676
1888.....	236	214
1889.....	1,332	987
1890.....	1,322	978

TABLE 6.
MINERAL PIGMENTS.
MISCELLANEOUS IMPORTS, FISCAL YEAR, 1904.

	Duty.	Quantity.	Value.
Paint, ground or mixed in, or with either japan, varnish, lacquers, liquid dryers, collodion, oil finish or oil varnish..... Lbs.	25 p. c.	.....	\$
Paints and colours, rough stuff and fillers, anti-corrosive and anti-fouling paints commonly used for ship hulls, N.E.S. "	25 "	4,498,576	248,928
Paris green, dry "	10 "	80,765	13,779
Paints and colours ground in spirits, and all spirit varnishes and lacquers Galls.	\$1.12½ per gallon ..	902	2,594
Putty..... Lbs.	20 p. c.	293,323	4,471
Total .....	.....	.....	269,772

MINERAL WATERS.

As has been stated in previous reports the following figures of production of mineral waters must be taken more or less as approximations. At a number of places in Canada where mineral springs occur, the water is being used for drinking or bathing, many are also bottled and sold in considerable quantity. At several points hotels have been erected near springs, the waters of which have curative properties. No data are available of the quantities thus used locally. It is therefore very difficult to obtain returns which would enable accurate statistics of the industry to be compiled.

TABLE 1.
MINERAL WATERS.
ANNUAL PRODUCTION.

Calendar Year.	Gallons.	Value.	Calendar Year.	Gallons.	Value.
1888.....	124,850	\$ 11,456	1897.....	749,691	\$141,477
1889.....	424,600	37,360	1898.....	555,000	100,000
1890.....	561,165	66,031	1899.....		100,000
1891.....	427,485	54,268	1900.....		75,000
1892.....	640,380	75,348	1901.....		100,000
1893.....	725,096	108,347	1902.....		100,000
1894.....	767,460	110,040	1903.....		100,600
1895.....	739,382	126,048	1904.....		100,000
1896.....	706,372	111,736	1905.....		100,000

TABLE 2.
MINERAL WATERS.
IMPORTS.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$41,797	1893	27,909
1881.....	55,763	1894.....	28,130
1882.....	57,953	1895.....	27,879
1883.....	49,546	1896.....	32,674
1884.....	48,613	1897.....	22,142
1885.....	55,864	1898.....	33,314
1886.....	47,006	1899.....	38,046
1887.....	52,989	1900.....	30,343
1888.....	54,891	1901.....	40,802
1889.....	66,331	1902.....	91,871
1890.....	71,521	1903.....	108,130
1891.....	15,721	1904.....	137,304
1892.....	17,913		
1905 { Mineral waters, natural, not in bottle..... D. ty free..			\$ 630
{ Mineral and aerated waters " 20 p.c.			161,160
Total.....			\$161,790

NATURAL GAS.

The total value of the natural gas sold in Canada in 1905 was \$379,561 as compared with \$328,376 in 1904. The greater part of this output is derived from the wells in Ontario, the balance at Medicine Hat, Alta. There were nearly 300 producing wells in Ontario during the year and about 11 in Medicine Hat. The main field in Ontario, Welland county, is still the largest producer, the chief operating company being the Provincial Natural Gas and Fuel Company. The most recently discovered field in the counties of Haldimand and Brant is furnishing an increasing amount of gas, and the largest operator in this district, the Dominion Natural Gas Co., Ltd., has been absorbing some of the smaller operators and looking for new markets in the adjacent towns. The number of new producing wells bored in Ontario during the year was about 53.

The Medicine Hat, Alberta, gas field is yearly increasing in importance, in so far as output is concerned. The municipality is now the owner of six producing wells, supplying gas for street lighting and for sale to householders and manufacturers. The Canadian Pacific Railway owns one well put down in the railway yard, the gas being used for lighting and heating. There are in addition several privately owned wells.

It is a somewhat difficult matter to arrive at a satisfactory valuation of the gas used at Medicine Hat. In the case of the municipal plant the receipts from gas sold furnish a basis of value, but the gas from the Canadian Pacific Railway and other wells is neither measured nor sold. An endeavour has therefore been made to find the value of the services displaced, such as coal, &c., and then with a very liberal allowance for increased efficiency given by the gas the total value of the gas utilized in Medicine Hat during 1905 has been placed at \$33,000.

TABLE 1.
NATURAL GAS.
ANNUAL PRODUCTION.

Calendar Year.	Value.
1892.....	\$ 150,000
1893.....	376,233
1894.....	313,754
1895.....	423,032
1896.....	276,301
1897.....	325,873
1898.....	322,123
1899.....	387,271
1900.....	417,094
1901.....	339,476
1902.....	195,992
1903.....	202,210
1904.....	328,376
1905.....	379,561

PETROLEUM.

A great deal of exploration and drilling in search of new oil fields has been carried on in 1905 in various parts of Canada, more especially in the provinces of Alberta, of British Columbia, of New Brunswick and on the Island of Manitoulin in Ontario. But apart from a small quantity obtained in New Brunswick in the vicinity of Memramcook the total Canadian production of oil has been derived from the several pools of southern Ontario.

The details of production for the past few years are as follows:—

Crude Oil.	1901.	1902.	1903.	1904.
	Bbls.	Bbls.	Bbls.	Bbls.
Received at refineries	508,677	443,333	410,280	455,074
Direct sales for industrial purposes	113,715	87,291	76,357	48,400
Total sales of crude oil.....	622,392	530,624	486,637	503,474
" in gallons.....	21,783,720	18,571,840	17,032,295	17,621,590

Production calculated on the basis of bounty paid by the Dominion Government of $1\frac{1}{2}$ c. per gallon.	1905.
Six months ending June 1905.	13,519,031 galls.
" " December 1905.....	8,674,305 "
Total, 1905	22,193,336 galls.
	634,095 bbls.

TABLE 1.
PETROLEUM.
CANADIAN OILS AND NAPHTHA INSPECTED AND CORRESPONDING QUANTITIES
OF CRUDE OIL.

Calendar Year.	Refined Oils Inspected.	Crude Equivalent Calculated.	Ratio of Crude to Refined.	Equivalent in Barrels of 35 Gallons	Average Price per Barrel of Crude.	Value of Crude Oil.
	Gallons.	Gallons.				
1881.....	6,457,270	12,914,540	100:50	368,987	.....	.....
1882.	6,135,782	13,635,071	100:45	389,573	.....	.....
1883.	7,447,648	16,550,328	100:45	472,866	.....	.....
1884.	7,993,995	19,984,987	100:40	571,000	.....	.....
1885.	8,225,882	20,564,705	100:40	587,563	.....	.....
1886.	7,768,006	20,442,121	100:38	584,061	\$0 90	\$525,655
1887.	9,492,588	24,980,494	100:38	713,728	0 78	556,708
1888.	9,246,176	24,332,042	100:38	695,203	1 02½	713,695
1889.	9,472,476	24,664,144	100:38	704,690	0 92½	653,600
1890.	10,174,894	26,776,037	100:38	795,030	1 18	902,734
1891.	10,065,463	26,435,430	100:38	755,298	1 33½	1,010,211
1892.	10,370,707	27,291,334	100:38	779,753	1 26½	984,438
1893.	10,618,804	27,944,221	100:38	798,406	1 09½	874,255
1894.	11,027,982	29,018,637	100:38	829,104	1 00½	835,322
1895.	10,674,232	25,414,838	100:42	726,138	1 49½	1,036,738
1896.	10,684,284	25,438,771	100:42	726,822	1 59	1,155,647
1897.	10,434,878	24,841,995	100:42	709,857	1 42½	1,011,546
1898.	11,148,348	26,543,685	100:42	758,391	1 40	1,061,747
1899.	11,927,981	28,399,955	100:42	808,570	1 48½	1,202,020
1900.	13,428,422	24,867,449	100:54	710,498	1 62	1,151,007

During the session of 1904 of the Dominion parliament, an act was introduced and passed providing for the payment of a bounty of one and a half cents per gallon on all crude petroleum produced from wells in Canada. The official figures of the bounty paid serve as excellent basis for calculating the production of crude oil, and they have been so adopted for the year 1905. For the previous years, between 1901 and 1904 the production is based on direct returns as indicated in the first column of the above tabulated statement. For the years previous to 1901 the production of crude oil was obtained from government inspection returns, by assuming a ratio of crude to refined, and the statistics of production on this basis will be found in Table 1. This method was open to objection, however, owing to the possible incorrectness of the ratio assumed.

There is a marked increase in 1905 over the production of 1904, for which the stimulus caused by the granting of the bounty is probably responsible. There has also been a much greater production from the Leamington field, Mersea township, Essex county, Ontario, where a new and very productive pool has been struck.

The following tables illustrate the petroleum industry of Canada, by giving the exports, imports, returns of inspection and other data.

SESSIONAL PAPER No. 26a

TABLE 2.

PETROLEUM.

VALUE OF THE PRODUCTION OF CANADIAN OIL REFINERIES.

Calendar Year.	Value.	Calendar Year.	Value.
1887.....	\$1,288,109	1897.....	1,672,429
1888.....	1,401,459	1898.....	1,825,265
1889.....	1,414,184	1899.....	1,490,870
1890.....	1,638,420	1900.....	1,620,705
1891.....	1,534,509	1901.....	1,251,373
1892.....	1,782,365	1902.....	1,222,641
1893.....	1,675,784	1903.....	1,302,104
1894.....	1,567,134	1904.....	975,840
1895.....	1,806,237	1905.....	(a) 1,815,525
1896.....	1,876,913		

(a) Derived from both Canadian and imported crude oils.

TABLE 3.

PETROLEUM.

TOTAL AMOUNT OF OIL INSPECTED, CANADIAN AND IMPORTED.

Fiscal Year	Canadian.	Imported.	Total.	Canadian.	Imported.
	Gallons.	Gallons.	Gallons.	Per cent.	Per cent.
1881.....	6,406,783	476,784	6,883,567	93.1	6.9
1882.....	5,910,747	1,351,412	7,262,159	81.4	18.6
1883.....	6,970,550	1,190,828	8,161,378	85.4	14.6
1884.....	7,656,001	1,142,575	8,798,586	87.0	13.0
1885.....	7,661,617	1,278,115	8,939,732	85.7	14.3
1886.....	8,149,472	1,327,616	9,477,088	86.0	14.0
1887.....	8,243,962	1,665,604	9,909,566	83.2	16.8
1888.....	9,545,895	1,821,342	11,367,237	84.0	16.0
1889.....	9,462,834	1,767,812	11,230,646	84.3	15.7
1890.....	10,121,210	2,020,742	12,141,952	83.4	16.6
1891.....	10,270,107	2,022,002	12,292,109	83.6	16.4
1892.....	10,238,426	2,429,445	12,667,871	80.8	19.2
1893.....	10,683,806	2,641,690	13,325,496	80.2	19.8
1894.....	10,824,270	5,633,222	16,457,492	65.8	34.2
1895.....	10,936,992	5,650,994	16,587,986	65.9	34.1
1896.....	10,533,951	5,807,991	16,341,942	64.5	35.5
1897.....	10,506,526	6,248,743	16,755,269	62.7	37.3
1898.....	10,796,847	6,880,734	17,677,581	61.1	38.9
1899.....	11,005,804	7,232,348	18,238,152	60.3	39.7
1900.....	13,014,713	*8,216,207	21,230,920	61.3	38.7
1901.....	12,674,977	*9,232,165	21,907,142	57.9	42.1
1902.....	10,494,874	*10,916,396	21,411,270	49.0	51.0
1903.....	8,615,892	*14,479,176	23,095,068	37.3	62.7
1904.....	7,292,113	*17,369,930	24,662,043	29.6	70.4
1905.....	17,520,035	*10,284,053	27,804,088	63.0	37.0

* Item (a) Table 5.

GEOLOGICAL SURVEY OF CANADA

6-7 EDWARD VII., A. 1907

TABLE 4.
PETROLEUM.

EXPORTS OF CRUDE AND REFINED PETROLEUM.

Calendar Year.	Crude Oil.		Refined Oil.		Total.	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
1881	.....	.....	.....	.....	501	\$ 99
1882	.....	.....	.....	.....	1,119	286
1883	.....	.....	.....	.....	13,283	710
1884	.....	.....	.....	.....	1,098,090	30,168
1885	.....	.....	.....	.....	337,967	10,562
1886	.....	.....	.....	.....	241,716	9,855
1887	.....	.....	.....	.....	473,559	13,831
1888	.....	.....	.....	.....	196,602	74,542
1889	.....	.....	.....	.....	235,855	10,777
1890	.....	.....	.....	.....	420,492	18,154
1891	446,770	\$ 18,471	585	\$104	447,355	18,575
1892	310,387	12,945	1,146	100	311,533	13,045
1893	107,719	3,696	2,196	394	109,915	4,090
1894	53,985	2,773	5,297	513	59,282	3,286
1895	22,831	1,044	10,237	2,023	33,068	3,067
1896	601	101	7,489	999	8,090	1,100
1897	.....	.....	342	49	342	49
1898	96	4	12,735	3,001	12,831	3,005
1899	.....	.....	3,425	859	3,425	859
1900	40	2	8,559	2,394	8,599	2,396
1901	14,168	691	375	66	14,543	757
1902	400	40	626	146	1,026	186
1903	350	15	1,013	190	1,363	205
1904	4,207	213	2,126	470	6,333	683
1905	35	2	7,228	2,078	7,263	2,080

SESSIONAL PAPER No. 26a

TABLE 5.

PETROLEUM.

IMPORTS OF PETROLEUM AND PRODUCTS OF.

Fiscal Year.		Gallons.	Value.
			\$
1880.		687,641	131,359
1881.		1,437,475	262,168
1882.		3,007,702	398,031
1883.		3,086,316	358,546
1884.		3,160,282	380,082
1885.		3,767,441	415,195
1886.		3,819,146	421,836
1887.		4,290,003	467,003
1888.		4,523,056	408,025
1889.		4,650,274	484,462
1890.		5,075,650	515,852
1891.		5,071,386	498,330
1892.		5,649,145	475,732
1893.		6,002,141	446,389
1894.		6,597,108	439,988
1895.		7,577,674	525,372
1896.		8,005,891	735,913
1897.		8,415,302	697,169
1898.		9,074,311	724,519
1899.		10,394,208	763,303
1900.		9,633,647	864,833
1901.		11,082,822	982,640
1902.		13,220,005	1,107,207
1903.		18,799,312	1,643,371
1904.		24,521,115	2,152,623

Oils:—		Duty.	Gallons.	Value.
Mineral:				\$
1905	(a) Coal and kerosene, distilled, purified or refined, naphtha and petroleum, N.E.S.	2½c. p. gall.	10,284,053	943,207
	(b) Products of petroleum.	2½c. "	879,488	96,629
	(c) Crude petroleum, gas oils (other than benzine and gasoline) ..	1½c. "	72,533	3,771
	Petroleum crude, fuel and gas oils (8233 specific gravity) free.	Free.	22,440,856	897,642
	(d) Illuminating oils composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon ..	20 p. c.	10,232	2,593
	(e) Lubricating oils composed wholly or in part of petroleum, costing less than 25 cents per gallon ..	2½c. p. gall.	1,609,220	207,672
Total.....			35,296,332	2,151,514

TABLE 6.*

PETROLEUM.

IMPORTS OF CRUDE AND MANUFACTURED OILS, OTHER THAN ILLUMINATING.

Fiscal Year.	Gallons.	Fiscal Year.	Gallons.
1881.....	960,691	1894.....	1,860,829
1882.....	1,656,290	1895.....	1,106,993
1883.....	1,895,488	1896.....	1,079,965
1884.....	2,017,707	1897.....	802,286
1885.....	2,489,326	1898.....	1,047,026
1886.....	2,491,530	1899.....	1,017,278
1887.....	2,624,399	1900.....	1,406,700
1888.....	2,701,714	1901.....	1,838,966
1889.....	2,882,462	1902.....	2,296,353
1890.....	3,054,908	1903.....	4,316,010
1891.....	3,049,384	1904.....	7,141,109
1892.....	3,047,199	1905.....	25,002,047
1893.....	1,481,749		

* The figures for the years from 1881 to 1894, inclusive, represent the total imports of petroleum and products, less the quantity of imported illuminating oils, inspected by the Inland Revenue Department. For 1895 and subsequent years, the Table is composed of items (b), (c) and (e) of Table 5.

TABLE 7.

PETROLEUM.

IMPORTS OF PARAFFINE WAX.

Fiscal Year.	Pounds.	Value.
1883.....	43,716	\$ 5,166
1884.....	39,010	6,079
1885.....	59,967	8,123
1886.....	62,035	7,953
1887.....	61,132	6,796
1888.....	53,862	4,930
1889.....	63,229	5,250
1890.....	239,229	15,844
1891.....	753,854	50,275
1892.....	733,873	48,776
1893.....	452,916	38,935
1894.....	208,099	15,704
1895.....	163,817	11,579
1896.....	150,287	10,042
1897.....	138,703	7,945
1898.....	103,570	5,987
1899.....	92,242	4,025
1900.....	47,400	3,529
1901.....	118,844	9,639
1902.....	225,885	12,750
1903.....	592,642	28,674
1904.....	418,967	18,440
1905 ..(Duty, 25 p. c.)	81,992	7,795

SESSIONAL PAPER No. 26a

TABLE 8.

PETROLEUM.

IMPORTS OF PARAFFINE WAX CANDLES.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	10,445	\$2,269	1894.....	10,818	\$1,685
1881.....	7,494	1,683	1895.....	19,448	2,541
1882.....	5,818	1,428	1896.....	25,787	4,072
1883.....	7,149	1,734	1897.....	25,114	2,929
1884.....	8,755	2,229	1898.....	60,802	4,427
1885.....	9,247	2,449	1899.....	62,331	5,856
1886.....	12,242	2,587	1900.....	27,663	3,671
1887.....	21,364	3,611	1901.....	44,562	3,588
1888.....	22,054	2,829	1902.....	51,120	5,752
1889.....	8,038	1,337	1903.....	83,377	9,025
1890.....	7,233	1,186	1904.....	83,471	9,078
1891.....	10,598	2,116	1905. . (Duty,		
1892.....	9,259	1,952	25 p.c.).....	137,353	15,293
1893.....	8,351	1,735			

PHOSPHATE.

The production of Phosphate (Apatite) in 1905 is estimated at about 1,300 tons valued at \$8,425. With the exception of a small quantity from Ontario this is nearly all obtained from the Mica mines north of Ottawa and is all used at Buckingham.

Statistics of production and exports are given in Tables 1 and 2.

TABLE 1.

PHOSPHATE.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Average Value per ton.	Value.
1886.....	20,495	\$14.85	\$304,338
1887.....	23,690	13.50	319,815
1888.....	22,485	10.77	242,285
1889.....	30,988	10.21	316,662
1890.....	31,753	11.37	361,045
1891.....	23,588	10.24	241,603
1892.....	11,932	13.20	157,424
1893.....	8,198	8.65	70,942
1894.....	6,861	6.00	41,166
1895.....	1,822	5.25	9,565
1896.....	570	6.00	3,420
1897.....	908	4.39	3,984
1898.....	733	5.00	3,665
1899.....	3,000	6.00	18,000
1900.....	1,415	5.02	7,105
1901.....	1,033	6.07	6,280
1902.....	856	5.79	4,953
1903.....	1,329	6.18	8,214
1904.....	817	5.62	4,590
1905.....	1,300	6.48	8,425

SESSIONAL PAPER No. 26a

TABLE 2.

PHOSPHATE.

EXPORTS.

Calendar Year.	Ontario.		Quebec.		Totals.	
	Tons.	*Value.	Tons.	*Value.	Tons.	*Value.
1878.....	824	\$12,278	9,919	\$195,831	10,743	\$208,109
1879.....	1,842	20,565	6,604	101,470	8,446	122,035
1880.....	1,387	14,422	11,673	175,664	13,060	190,086
1881.....	2,471	36,117	9,497	182,339	11,968	218,456
1882.....	568	6,338	16,585	302,019	17,153	308,357
1883.....	50	500	19,666	427,168	19,716	427,668
1884.....	763	8,890	20,946	415,350	21,709	424,240
1885.....	434	5,962	28,535	490,331	28,969	496,293
1886.....	644	5,816	19,796	337,191	20,460	343,007
1887.....	705	8,277	22,447	424,940	23,152	433,217
1888.....	2,643	30,247	16,133	268,362	18,776	298,609
1889.....	3,547	38,833	26,440	355,935	29,987	394,768
1890.....	1,866	21,329	26,591	478,040	28,457	499,369
1891.....	1,551	16,646	15,720	368,015	17,271	384,661
1892.....	1,501	12,544	9,981	141,221	11,482	153,765
1893.....	1,990	11,550	5,748	56,402	7,738	67,952
1894.....	1,980	10,560	3,470	29,610	5,450	40,170
1895.....			250	2,500	250	2,500
1896.....	1	5	299	2,990	300	2,995
1897.....	70	450	165	400	235	850
1898.....	21	240	702	8,000	723	8,240
1899.....	215	1,850	93	1,725	308	3,575
1900.....					Nil	Nil
1901.....					6	120
1902.....					70	1,880
1903.....					1	20
1904.....					191	5,348
1905.....					40	1,253

*These values do not compare with those in Table 1 above; the spot value is adopted for the production whilst the exports are valued upon quite a different basis.

PYRITES.

The production of pyrites in 1905 reached a total of 33,339 tons, valued at \$125,486, as compared with 37,180 tons, valued at \$134,033 in 1904. Of the total output all but a small percentage was the product of the Eustis Mining Co. and of the Nichols Chemical Company at Eustis and Capelton, near Sherbrooke, in the Eastern Townships, province of Quebec.

In Ontario two companies were mining and shipping pyrites from Madoc and Queensboro', in Hastings county, the American Madoc Mining Company and the British American Development Company, and the total output was valued at \$21,470.

The exports of pyrites during 1905 were, according to Custom Returns, 19,755 tons, valued at \$55,767.

Statistics of the production of pyrites and of the imports of brimstone and sulphur are given in Tables 1 and 2.

TABLE 1.

PYRITES.

ANNUAL PRODUCTION.

Calendar Year.	Tons. 2,000 lbs.	Value.
		\$
1886.....	42,906	193,077
1887.....	38,043	171,194
1888.....	63,479	285,656
1889.....	72,225	307,292
1890.....	49,227	123,067
1891.....	67,731	203,193
1892.....	59,770	179,310
1893.....	58,542	175,626
1894.....	40,527	121,581
1895.....	34,198	102,594
1896.....	33,715	101,155
1897.....	38,910	116,730
1898.....	32,218	128,872
1899.....	27,687	110,748
1900.....	40,031	155,164
1901.....	35,261	130,544
1902.....	35,616	138,939
1903.....	33,982	127,713
1904.....	37,180	134,033
1905.....	33,339	125,486

TABLE 2.

PYRITES.

IMPORTS :—BRIMSTONE AND CRUDE SULPHUR.

Fiscal Year.	Pounds.	Value.
		8
1880.....	1,775,489	27,401
1881.....	2,118,720	33,956
1882.....	2,375,821	40,329
1883.....	2,336,085	36,737
1884.....	2,195,735	37,463
1885.....	2,248,986	35,043
1886.....	2,922,043	43,651
1887.....	3,103,644	38,750
1888.....	2,048,812	25,318
1889.....	2,427,510	34,006
1890.....	4,440,799	44,276
1891.....	3,601,748	46,351
1892.....	4,769,759	67,095
1893.....	6,381,203	77,216
1894.....	5,845,463	61,558
1895.....	4,900,225	56,965
1896.....	6,934,190	63,973
1897.....	8,672,751	87,719
1898.....	38,026,798	373,786
1899.....	24,517,026	265,799
1900.....	21,128,656	215,433
1901.....	23,856,651	270,608
1902.....	24,640,735	325,307
1903.....	24,412,737	259,123
1904.....	19,364,730	204,663
1905*	23,435,140	242,251

*Brimstone, crude, or in roll or flour, and sulphur in roll or flour. Duty free.

SALT.

The production and sales of salt in Canada in 1905 reached a total, according to direct returns from operators, of about 67,340 tons valued at \$320,858 while stock in hand on Dec. 31, 1905 amounted to about 5,206 tons. The value of the packages used was \$113,004. The number of men employed was about 191 and the total wages paid \$83,391. This output is derived altogether from the province of Ontario, from the deposits in the counties of Essex, Lambton, Middlesex, Huron and Bruce. Large quantities of salt exist in the underlying formations of that part of the country at depths varying from 975 feet to 1,400 feet and the industry is practically only limited by the demand.

In 1896 a few tons of salt were produced at the south end of Lake Winnipegosis, Manitoba, but the industry has not been followed up in this district. Small quantities of brine have occasionally been evaporated at Plumwesep, New Brunswick, and sold locally along the line of the Intercolonial Railway and it is reported that preparations are being made to renew production at this place.

The exports of salt, which are of small amount, are shown in Table 2. Tables 3 and 4 show the quantities and values of the salt imported. The value of salt imported on which duty is levied has ranged from \$20,000 to \$80,000 a year, the value in 1905 being \$58,056.

Salt imported from the United Kingdom or any British possession or imported for the use of the sea or gulf fisheries is free of duty, and a large portion of the trade of Eastern Canada is supplied with salt imported under this class. The quantity imported, duty free, in 1905 was 98,453 tons valued at \$340,954.

Following is a list of the chief producers of salt in Ontario :—

The Canadian Salt Co., Ltd., E. G. Henderson, vice-President.	Windsor.
Saginaw Lumber and Salt Co.	Sanitwich.
Mooretown Salt Co., Ltd.	Mooretown.
Carter & Kittermaster	"
Sarnia Salt Co., Ltd.	Sarnia.
Sarnia Bay Mills Co.	"
Empire Salt Co.	"
Elarton Salt Works Co., Ltd., C. V. Morris.	Warwick.
Parkhill Salt Co., A. K. Hodgins.	Exeter.
Exeter Salt Works Co., J. B. Carling, Secy.	"
Hensall Salt Works Co., Geo. McEwen, Secy.	Hensall.
Lake Huron and Manitoba Milling Co., Ltd., P. A. McGaw, Secy.	Goderich.
R. & J. Ransford.	Clinton.
Operating the following plants—	
Coleman Salt Works	Seaforth.
Stapleton Salt Works	Clinton.
North American Chemical Co.	Goderich.
Goderich Salt Works	"
Brussels Salt Works	Brussels.
Clinton Salt Works, John McGarva.	Clinton.
Maitland Salt Works, John S. Platt.	Goderich.
The Grey, Young & Sparling Co. of Ont., Ltd., F. G. Sparling.	Wingham.
The Ontario People's Salt & Soda Co., Ltd., John Tolmie, Secy.	Kincardine.

SESSIONAL PAPER No. 26a

TABLE 1.
SALT.
ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.
1886.....	62,359	\$227,195
1887.....	60,173	166,394
1888.....	59,070	185,460
1889.....	32,832	129,547
1890.....	43,754	198,857
1891.....	45,021	161,179
1892.....	45,486	162,041
1893.....	62,324	195,926
1894.....	57,199	170,687
1895.....	52,376	160,455
1896.....	43,960	169,693
1897.....	51,348	225,730
1898.....	57,142	248,639
1899.....	59,339	254,390
1900.....	62,055	279,458
1901.....	59,428	262,328
1902.....	64,456	292,581
1903.....	62,452	297,517
1904.....	69,477	321,778
1905.....	67,340	320,858

TABLE 2.
SALT.
EXPORTS.

Calendar Year.	Bushels.	Value.
1880.....	467,641	\$46,211
1881.....	343,208	44,627
1882.....	181,758	18,350
1883.....	199,733	19,492
1884.....	167,029	15,291
1885.....	246,794	18,756
1886.....	224,943	16,886
1887.....	154,045	11,526
1888.....	15,251	3,987
1889.....	8,557	2,390
1890.....	6,605	1,667
1891.....	5,290	1,277
1892.....	2,000	504
1893.....	4,940	1,267
1894.....	4,639	1,120
1895.....	4,865	959
1896.....	3,842	899
1897.....	5,383	1,193
1898.....	5,202	1,252
1899.....	11,205	2,773
1900.....	37,653	8,997
1901.....	39,224	6,510
1902.....	9,331	3,798
Pounds.		
1903.....	1,915,648	5,927
1904.....	1,006,036	4,186
1905.....	1,447,728	6,112

TABLE 3.

SALT.

IMPORTS :—SALT PAYING DUTY.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	726,640	\$ 3,916	1893.....	21,377,339	79,838
1881.....	2,588,465	6,355	1894.....	15,867,825	53,336
1882.....	3,679,415	12,318	1895.....	8,498,404	29,881
1883.....	12,136,968	36,223	1896.....	7,665,257	24,550
1884.....	12,770,950	38,949	1897.....	11,911,766	33,470
1885.....	10,397,761	31,726	1898.....	11,068,785	32,792
1886.....	12,266,021	39,181	1899.....	11,781,453	32,839
1887.....	10,413,258	35,670	1900.....	11,028,337	30,180
1888.....	10,509,799	32,136	1901.....	11,625,688	34,087
1889.....	11,190,088	38,968	1902.....	13,892,849	39,605
1890.....	15,135,109	57,549	1903.....	14,554,693	41,785
1891.....	15,140,827	59,311	1904.....	29,779,183	73,826
1892.....	18,648,191	65,963			
			Duty.		
1905	{ Salt, coarse, N.E.S		5c. per 100 lbs.	12,320,072	\$30,950
	{ Salt, fine, in bulk.....		5c. "	1,743,200	5,328
	{ Salt, N.E.S., in bags, barrels or				
	{ other packages.....		7½c. "	4,410,596	21,778
Total				18,473,868	58,056

TABLE 4.

SALT.

IMPORTS :—SALT NOT PAYING DUTY.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	212,714,747	\$400,167	1893.....	191,595,530	281,462
1881.....	231,640,610	488,278	1894.....	196,668,730	328,300
1882.....	166,183,962	311,489	1895.....	201,691,248	332,711
1883.....	246,747,113	386,144	1896.....	205,005,100	338,888
1884.....	225,390,121	321,243	1897.....	215,844,484	312,117
1885.....	171,571,209	255,719	1898.....	202,634,927	293,410
1886.....	180,205,949	255,359	1899.....	183,046,365	267,520
1887.....	203,042,332	285,455	1900.....	193,554,550	295,253
1888.....	184,166,986	220,975	1901.....	216,271,603	339,887
1889.....	180,847,800	253,009	1902.....	238,648,737	335,629
1890.....	158,490,075	252,291	1903.....	232,708,675	361,185
1891.....	195,491,410	321,239	1904.....	198,634,047	358,082
1892.....	201,831,217	314,995	1905*.....	196,907,500	340,954

*Salt imported from the United Kingdom, or any British possession, or imported for the use of the sea or gulf fisheries.

MISCELLANEOUS NON-METALLIC.

Arsenic.—Up to 1903 the main source of production of arsenic in Canada was the Deloro mine in Hastings county, province of Ontario. The arsenic was recovered in the process of treating auriferous mispickel. In 1902, however, the mine was closed and the mill continued to work on tailings and ore from the dump until 1903 when operations were abandoned. In 1904 and 1905 the arsenic production is represented by arsenical minerals contained in the ore shipped from the Cobalt district, Ontario. It cannot be definitely ascertained whether the arsenic is saved in the process of treating these ores, but it probably is.

TABLE 1.

MISCELLANEOUS—NON-METALLIC.

ANNUAL PRODUCTION OF ARSENIC.

Calendar Year.	Tons.	Value.
1885	440	\$17,600
1886	120	5,460
1887	30	1,200
1888	30	1,200
1889	Nil.	Nil.
1890	25	1,500
1891	20	1,000
1892	Nil.	Nil.
1893	"	"
1894	7	420
1895	Nil.	Nil.
1896	"	"
1897	"	"
1898	"	"
1899	57	4,872
1900	303	22,725
1901	695	41,676
1902	800	48,000
1903	257	15,420
1904	(a) 72	903
1905	(a) 549	2,692

(a) Arsenic in ore, &c.

TABLE 2.
MISCELLANEOUS—NON-METALLIC.
IMPORTS OF ARSENIC.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	18,197	\$ 576	1893.....	447,079	\$12,907
1881.....	31,417	1,070	1894.....	292,505	10,018
1882.....	138,920	3,962	1895.....	1,115,697	31,932
1883.....	51,953	1,812	1896.....	664,854	27,523
1884.....	19,337	773	1897.....	152,275	8,378
1885.....	49,080	1,566	1898.....	291,967	14,270
1886.....	30,181	961	1899.....	582,383	24,203
1887.....	32,436	1,116	1900.....	230,730	11,035
1888.....	27,510	1,016	1901.....	159,263	8,361
1889.....	69,269	2,434	1902.....	106,857	6,004
1890.....	138,509	4,474	1903.....	298,375	11,824
1891.....	115,248	4,027	1904.....	414,065	12,421
1892.....	302,958	9,365	1905...Duty free.	268,274	7,661

TABLE 3.
MISCELLANEOUS—NON-METALLIC.
IMPORTS OF CHALK.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$2,117	1893.....	\$ 9,966
1881.....	2,768	1894.....	11,308
1882.....	2,882	1895.....	7,730
1883.....	5,067	1896.....	6,467
1884.....	2,589	1897.....	7,432
1885.....	8,003	1898.....	9,338
1886.....	6,583	1899.....	10,461
1887.....	5,635	1900.....	12,212
1888.....	5,865	1901.....	11,629
1889.....	5,336	1902.....	11,337
1890.....	7,221	1903.....	16,497
1891.....	8,193	1904.....	19,163
1892.....	9,558	1905*.....	20,896

* Chalk prepared. Duty, 20 p. c.

SESSIONAL PAPER No. 26a

TABLE 4.
MISCELLANEOUS—NON-METALLIC.
IMPORTS OF WHITING.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	84,115	\$26,092	1893.....	88,835	\$25,563
1881.....	47,480	16,637	1894.....	103,633	26,649
1882.....	36,270	16,318	1895.....	102,751	25,441
1883.....	76,012	29,334	1896.....	113,791	27,322
1884.....	76,268	28,230	1897.....	102,453	22,541
1885.....	67,441	23,492	1898.....	166,293	25,761
1886.....	65,124	25,533	1899.....	134,884	34,310
1887.....	47,246	15,191	1900.....	127,455	34,575
1888.....	76,619	20,508	1901.....	209,868	60,878
1889.....	84,658	22,735	1902.....	153,982	42,136
1890.....	96,243	27,471	1903.....	139,804	39,867
1891.....	84,679	27,504	1904.....	186,919	42,507
1892.....	102,985	26,867	1905*.....	198,485	51,215

*Whiting or whitening, gilder's whiting, and Paris white. Duty free

Feldspar.—The entire production of feldspar, in 1905, was derived from the province of Ontario and shipped to the United States. None of the operators in Quebec province reported any production.

The principal operators this year, were the Kingston Feldspar Mining Co., operating the Richardson Mine in Bedford township, Frontenac county, Ont., and Mr. Chas. Jenkins, of Petrolia, Ont., who is working another deposit on the south half of lot 3, con. III, of the same township.

TABLE 5.
MISCELLANEOUS—NON-METALLIC.
PRODUCTION OF FELDSPAR.

Calendar Year.	Tons.	Value.
1890.....	700	\$3,500
1891.....	685	3,425
1892.....	175	525
1893.....	575	4,525
1894.....	Nil.	Nil.
1895.....	.....	*2,545
1896.....	972	*2,583
1897.....	1,400	3,290
1898.....	2,500	6,250
1899.....	3,000	6,000
1900.....	318	1,112
1901.....	5,350	10,700
1902.....	7,576	15,152
1903.....	13,928	18,966
1904.....	11,083	22,166
1905.....	11,700	23,400

* Exports.

Fire-clay.—The returns of fire-clay production are given in the following table. The output shown is practically all from Nova Scotia and British Columbia, and the greater proportion of this production during the past two years is to be credited to the Intercolonial Coal Co., of Westville, N.S., and the Wellington Colliery Company at Comox, Vancouver Island, B.C. In both provinces the fire-clay is mined in connexion with coal mining operations. There is a good demand for fire-clay throughout the western part of Canada and should a good deposit of this material be discovered within a reasonable distance of the railway, there would be a fair market for it.

TABLE 6.

MISCELLANEOUS—NON-METALLIC.

PRODUCTION OF FIRE-CLAY.

Calendar Year, -	Tons.	Value.
1889.....	400	\$4,800
1890.....	Nil.	Nil.
1891.....	250	750
1892.....	1,991	4,467
1893.....	540	700
1894.....	539	2,167
1895.....	1,329	3,492
1896.....	842	1,805
1897.....	2,118	5,759
1898.....	670	1,680
1899.....	599	1,295
1900.....	1,245	4,130
1901.....	3,979	5,920
1902.....	2,741	4,283
1903.....	2,639	3,523
1904.....	5,972	17,463
1905.....	5,088	13,917

SESSIONAL PAPER No. 26a

TABLE 7.
MISCELLANEOUS—NON-METALLIC.
PRODUCTION OF MOULDING SAND.

Calendar Year.	Tons.	Value.
1887	160	\$ 800
1888	169	845
1889	170	850
1890	320	1,410
1891	230	1,000
1892	345	1,380
1893	4,370	9,086
1894	6,214	12,428
1895	6,765	13,530
1896	5,739	11,478
1897	5,485	10,931
1898	10,572	21,038
1899	13,724	27,430
1900	6,181	12,316
1901	14,705	29,410
1902	13,352	27,651
1903	3,658	7,256
1904	3,423	6,790
1905	*	*

* Returns incomplete.

TABLE 8.
MISCELLANEOUS—NON-METALLIC.
ANNUAL PRODUCTION OF QUARTZ.

Calendar Year.	Tons.	Value.
1890	200	\$ 1,000
1891		
1892		
1893	100	500
1894		
1895		
1896	10	50
1897		
1898	284	570
1899	600	1,260
1900-1905		

6-7 EDWARD VII., A. 1907

TABLE 9

MISCELLANEOUS—NON-METALLIC.

IMPORTS OF "SILEX"—CRYSTALLIZED QUARTZ.

Fiscal Year.	Cwt.	Value.
1880.....	5,252	\$ 2,290
1881.....	3,251	1,659
1882.....	3,283	1,678
1883.....	3,543	2,058
1884.....	3,259	1,709
1885.....	3,527	1,443
1886.....	2,520	1,313
1887.....	14,533	5,073
1888.....	4,808	2,385
1889.....	5,130	1,211
1890.....	1,768	2,617
1891.....	3,674	1,929
1892.....	1,429	1,244
1893.....	2,447	1,301
1894.....	2,451	1,521
1895.....	2,882	1,881
1896.....	3,289	2,174
1897.....	2,564	3,415
1898.....	3,104	2,773
1899.....	3,951	2,595
1900.....	4,021	2,876
1901.....	3,562	2,106
1902.....	4,388	3,858
1903.....	3,514	2,762
1904.....	5,547	4,409
1905..... Duty free.	8,931	4,475

TABLE 10.

MISCELLANEOUS—NON-METALLIC.

ANNUAL PRODUCTION OF SOAPSTONE AND TALC.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.....	50	\$ 400	1896.....	410	1,230
1887.....	100	800	1897.....	157	350
1888.....	140	280	1898.....	405	1,000
1889.....	195	1,170	1899.....	450	1,960
1890.....	917	1,239	1900.....	1,420	6,365
1891.....	Nil	Nil	1901.....	259	842
1892.....	1,374	6,240	1902.....	689	1,804
1893.....	717	1,920	1903.....	990	2,739
1894.....	916	1,640	1904.....	840	1,875
1895.....	475	2,138	1905.....	500	1,890

STRUCTURAL MATERIALS.

These comprise building stone, granite, marbles, slate, flagstone, cements, lime, etc., as well as the manufactures of clay, such as bricks, tiles, drain pipe, earthenware and coarse pottery.

In the past it has been found difficult to obtain complete statistics of production. Many of these industries such as quarrying, brick-making, etc., are intermittent and are scattered over such a large area as Canada, that it has not been possible to obtain anything like full returns, so that a large proportion had to be estimated. The cement industry has been an important exception as very complete statistics of the manufacture of this product, have always been available. For 1905 an effort was made to obtain more complete statistics of brick production especially in districts where regular returns of output had not yet been obtained as in Manitoba, Saskatchewan, Alberta, British Columbia and the eastern maritime provinces. For the province of Ontario, it should be here explained, the Ontario Bureau of Mines has for a number of years obtained very complete statistics of production of clay products as well as of the other mineral output of the province and these figures as well as those for Quebec, published by the Dept. of Colonization, Mines and Fisheries, in the province of Quebec, have been utilized by the Mines Section of the Geol. Survey Dept. in estimating the total output of the Dominion. It is felt, however, that the time has arrived for the collection of more complete and uniform statistics of clay and stone products, for the whole of Canada and efforts in this direction will be continued.

Tables 1 to 12 following, show the annual production of stone, marble, granite, slate and flagstone, and the imports and exports of stone products.

The total aggregate value of the stone produced was over \$2,000,000. The value of the stone exported was but \$16,634, while the imports reached a total of \$491,671.

TABLE 1.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF BUILDING STONE.

Calendar Year.	Value.
1886.....	\$ 642,509
1887.....	552,267
1888.....	641,712
1889.....	913,691
1890.....	964,783
1891.....	708,736
1892.....	609,827
1893.....	1,100,000
1894.....	1,200,000
1895.....	1,095,000
1896.....	1,000,000
1897.....	1,000,000
1898.....	1,300,000
1899.....	1,500,000
1900.....	1,520,000
1901.....	1,650,000
1902.....	1,900,000
1903.....	1,975,000
1904.....	1,930,000
1905.....	1,830,000

TABLE 2.
STRUCTURAL MATERIALS.
EXPORTS OF STONE AND MARBLE, WROUGHT AND UNWROUGHT.

Calendar Year.	Wrought.	Unwrought.
1890.....	\$21,725	\$43,611
1891.....	13,398	46,162
1892.....	7,698	47,424
1893.....	9,102	12,532
1894.....	22,576	34,130
1895.....	8,587	51,616
1896.....	4,934	32,897
1897.....	9,415	42,034
1898.....	2,526	65,370
1899.....	5,092	101,931
1900.....	5,933	115,711
1901.....	5,917	157,739
1902.....	8,632	124,829
1903.....	7,684	46,295
1904.....	4,760	17,802
1905.....	3,545	13,089

SESSIONAL PAPER No. 26a

TABLE 3.

STRUCTURAL MATERIALS.

IMPORTS OF BUILDING STONE.

Calendar Year	Value.	Calendar Year.	Value.
1880.....	\$ 35,970	1893.....	\$56,510
1881.....	58,149	1894.....	52,908
1882.....	33,623	1895.....	44,282
1883.....	35,061	1896.....	54,130
1884.....	51,088	1897.....	38,714
1885.....	30,491	1898.....	28,495
1886.....	41,675	1899.....	48,040
1887.....	54,368	1900.....	64,533
1888.....	86,373	1901.....	46,078
1889.....	100,314	1902.....	99,074
1890.....	132,155	1903.....	87,866
1891.....	170,890	1904.....	93,778
1892.....	95,550		
1905 { Flagstones, granite and rough freestone, sandstone, and all building stone, not hammered or chiselled. Duty 15 p.c....			\$49,004
			53,813
			\$102,817

TABLE 4.

STRUCTURAL MATERIALS.

IMPORTS OF MANUFACTURES OF STONE OR GRANITE, N.E.S.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$29,408	1893.....	\$49,323
1881.....	36,877	1894.....	49,510
1882.....	37,267	1895.....	51,050
1883.....	45,636	1896.....	51,499
1884.....	45,290	1897.....	34,026
1885.....	39,867	1898.....	41,240
1886.....	41,984	1899.....	60,148
1887.....	41,829	1900.....	57,039
1888.....	47,487	1901.....	66,639
1889.....	61,341	1902.....	72,397
1890.....	84,396	1903.....	78,629
1891.....	61,051	1904.....	141,165
1892.....	39,479		
1905 { Granite—Sawn only..... Duty, 20 p.c.			\$14,015
		" Finished and polished..... " 35 p.c.	81,154
		" Manufactures of N.O.P..... " 35 p.c.	32,319
		Paving blocks..... " 20 p.c.	22,672
		Manufactures of stone, N.O.P..... " 30 p.c.	\$150,160

TABLE 5.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF MARBLE.

Calendar Year.	Tons.	Value.
1886	501	\$9,900
1887	242	6,224
1888	191	3,100
1889	83	980
1890	780	10,776
1891	240	1,752
1892	340	3,600
1893	590	5,100
1894	Nil.	Nil.
1895	200	2,000
1896	224	2,405
1897 to 1905 inclusive.....	Nil.	Nil.

TABLE 6.
STRUCTURAL MATERIALS.
IMPORTS OF MARBLE.

Fiscal Year.	Value.
1880.....	\$ 63,015
1881.....	85,977
1882.....	109,505
1883.....	128,520
1884.....	108,771
1885.....	102,835
1886.....	117,752
1887.....	104,250
1888.....	94,681
1889.....	118,421
1890.....	99,353
1891.....	107,661
1892.....	106,268
1893.....	96,177
1894.....	94,657
1895.....	83,422
1896.....	90,065
1897.....	77,150
1898.....	95,894
1899.....	101,879
1900.....	94,017
1901.....	96,151
1902.....	130,424
1903.....	153,481
1904.....	181,511
<hr/>	
1905 { Marble and manufactures of :—	Duty.
Marble sawn only	20 %
Finished and polished	35 %
Rough, not hammered or chiselled.....	15 %
Manufactures of, N.O.P.....	35 %
	\$89,306
	4,141
	52,019
<hr/>	
Total, marble and manufactures of.....	\$145,466

GRANITE.

Granite both for monumental and building purposes has been quarried in Nova Scotia, New Brunswick, Quebec and British Columbia during 1905. Fairly complete returns of output were received, the total value approximating \$226,305.

In Nova Scotia the granite industry was confined during the year to the vicinities of Halifax and Middleton. Mr. John Kline, of Halifax, owns and operates the quarries at Witherod Lake, about $3\frac{1}{2}$ miles southwest of Halifax. This stone, a light grey granite, has been quarried for over twenty years and used extensively throughout Halifax in building operations including foundations, ornamental work, fences, pedestals for monuments, paving blocks, etc. The Nictaux granite at Middleton in Annapolis county is quarried by the same operator and used almost exclusively in monumental work. This stone is taken out intermittently as required and shipped in the rough to the cutting and polishing works at Witherod lake where all kinds of monumental work is undertaken. This granite has been shipped in the rough to Aberdeen, Scotland, and also to the polishing works at St. George, New Brunswick.

Quarries have also been opened at Shelbourne harbour in the southwestern part of Nova Scotia and the stone, light grey in color, has been used for paving blocks. The quarries are admirably situated for shipment.

At Whitehead in Guysborough county about 200 miles to the east of Halifax is found an area of pink granite. Though not yet worked, it is said that stone could be quarried and loaded directly to schooners at the water's edge. It has been proposed to quarry and ship this granite to London, England.

In New Brunswick granite quarrying has been an established industry for many years. The quarries are located at Hampstead, Queens county, (the Spoon island quarries), and at St. George, Charlotte county. Both these occurrences of granite have been described by Prof. Bailey in Part M., Vol. X of the Geological Reports.

The Spoon island quarries were worked during the year by Allan Appleby and Messrs. B. Mooney & Sons of St. John, N. B. The stone both light and dark gray is used extensively for monumental purposes and for this purpose is worth about \$9 per ton f. o. b., at St. John. Much of it is now shipped to the polishing works at St. George. It is also employed in building construction and has been used in foundations, bridge piers and in buildings both public and private, in Fredericton and St. John.

The granites at St. George have been worked for many years and have attained considerable fame. They are especially distinguished on

account of their bright red colour and are employed principally for monumental and ornamental purposes. The rock is quarried in the valley of the Magaguadavic river a few miles above the town of St. George and is hauled by waggon to the polishing works in the village, of which there were six in operation in 1905. The operators of polishing works all quarry their own red stone and in addition purchase rough granite of other colours, gray, black, etc.; from quarries at Hampstead, N. B., and from Nova Scotia, Quebec and Maine. The total value of finished granite shipped from St. George during 1905 was a little over \$75,000. The industry is not now carried on quite so extensively as in former years, the falling off being ascribed in the first place to a public demand for other classes of granite and in the second place to the successful competition of Scotch granites due to low freight rates and the comparatively low wages paid to granite workers in Aberdeen, Scotland. The high duties on manufactured granite sent to the United States practically cut off that market.

The firms quarrying and manufacturing granite at St. George are:
Tayte Meating & Company.

Milne, Coutts & Company (Bay of Fundy Red Granite Works.)

Epps, Dodds & Company.

O'Brien & Baldwin.

McGrattan & Sons.

Messrs. Gilmour Bros. have also been quarrying a black granite about 12 miles from St. George for which there has been some considerable demand recently. The values of the red and gray granites in the rough at St. George are about \$1 per cubic foot and the black granite from \$1 to \$2 per foot. About 3,500 tons were shipped from New Brunswick quarries during the year.

Granite is of wide occurrence and is quarried at a number of places in the province of Quebec. In the county of Argenteuil, township of Chatham, a rose pink granite is obtained at the Laurentian Granite Quarries owned by J. Brunet of Montreal. The quarry is provided with steam power, steam drills, etc., and five miles of railway are being built to connect with the Canadian Pacific Railway.

In the county of Iberville, Que., a dark grey granite in three grades of fine, medium and coarse is being quarried by the Mt. Johnson Quarries Co., at Mount Johnson.

Large quantities of granite have been quarried in the township of Stanstead, Stanstead county. A number of quarries have been opened in this township and a grey or greyish white granite of fine quality is shipped. This granite is said to be close in grain, easily cut, and very strong in resisting power. During 1905 quarries were operated by James Brodie, Graniteville, Samuel B. Norton, Stanstead Junction,

SESSIONAL PAPER. No. 26a

and the Stanstead Granite Quarries Co., L'd., the latter company also operating polishing works at Beebe Plain.

In the county of Compton, Whitton township, a grey granite has been quarried at St. Cecile de Whitton and St. Samuel and shipments were made in 1905 by the Whitton Granite Company at St. Victor de Tring.

Important quarries have been worked in Portneuf county at Riviere a Pierre on the Lake St. John Railway. At this point a quarry was opened up to a considerable extent and a large quantity of stone taken out for the piers of the Quebec bridge. The Riviere a Pierre granite is very compact with coarse crystals, of a greyish colour easily cut and possesses all the necessary qualities for heavy building work. It also takes a fine polish as may be seen in that which has been used for ornamental stone in buildings at Quebec. Quarries were operated at this locality in 1905 by Jean Voyer and Jos. Perron of Rivière à Pierre.

No statistics of granite production in Ontario in 1905 have been received. In former years, however, quarries have been worked extensively near Gananoque on islands in the St. Lawrence river. These are known as the Forsythe Quarries and furnish a stone ranging in texture from coarse to fine and of varying shades of red. The product has been largely used for building and paving. Another quarry was opened at Willetsholm, six miles west of Gananoque, the stone being a blue granite obtaining its unusual colour from the dark blue felspar crystals.

Stone is frequently taken out by railway companies at convenient points along their lines for bridge building and other purposes. A granite quarry has thus been operated by the Canadian Pacific Railway at Peninsula Harbour, and the Algoma Central Railway has also opened a quarry of fine red granite on the northeast quarter section 9, Tarentorus township, within 8 miles of Sault Ste. Marie.

In the eastern and northern parts of the province granite areas are of extensive occurrence which as the demand arises and transportation becomes available will no doubt yield stone suitable for all purposes.

In British Columbia granite has been quarried on the north arm of Burrard inlet, a few miles north of Vancouver, and on Nelson and Granite islands at the mouth of Jervis inlet about 60 miles north of Vancouver. The stone is light grey in colour and can be obtained in large blocks. The quarries are operated by the Vancouver Granite Company.

TABLE 7.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF GRANITE.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.....	6,062	\$63,309	1896.....	18,717	106,709
1887.....	21,217	142,506	1897.....	10,345	61,934
1888.....	21,352	147,305	1898.....	23,897	81,073
1889.....	10,197	79,624	1899.....	13,418	90,542
1890.....	13,307	65,985	1900.....		80,000
1891.....	13,637	70,056	1901.....		155,000
1892.....	24,302	89,326	1902.....		210,000
1893.....	22,521	94,393	1903.....		200,000
1894.....	16,392	109,936	1904.....		150,000
1895.....	19,238	84,838	1905.....		226,305

SLATE AND FLAGSTONES.

The only slate quarries operated in Canada in recent years are those at New Rockland, Melbourne township, Richmond county, Quebec.

The production in 1905 was 4,975 squares valued at \$21,568. The output has remained about the same for the past four years.

TABLE 8.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF SLATE.

Calendar Year.	Tons.	Value.
1886.....	5,345	\$64,675
1887.....	7,357	89,000
1888.....	5,314	90,689
1889.....	6,935	119,160
1890.....	6,868	100,250
1891.....	5,000	65,000
1892.....	5,180	69,070
1893.....	7,112	90,825
1894.....		75,550
1895.....		58,900
1896.....		53,370
1897.....		42,800
1898.....		40,791
1899.....		33,406
1900.....		12,100
1901.....	715	9,980
1902.....		19,200
1903.....		22,040
1904.....		23,247
1905.....		21,568

SESSIONAL PAPER No. 23a

TABLE 9.
STRUCTURAL MATERIALS.
EXPORTS OF SLATE.

Calendar Year.	Tons.	Value.
1884	539	\$6,845
1885	346	5,274
1886	34	495
1887	27	373
1888	22	475
1889	26	3,303
1890	12	153
1891	15	195
1892	87	2,038
1893	178	3,168
1894	187	3,610
1895	36	574
1896	301	8,913
1897	Nil.	Nil.
1898	Nil.	Nil.
1899	Nil.	Nil.
1900	Nil.	Nil.
1901	16,750	10,000
1902 to 1905 . .	Nil.	Nil.

TABLE 10.
STRUCTURAL MATERIALS.
IMPORTS OF SLATE.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880	\$21,431	1893	\$51,179
1881	22,184	1894	29,267
1882	24,543	1895	19,471
1883	24,968	1896	24,176
1884	28,816	1897	21,615
1885	28,169	1898	24,907
1886	27,852	1899	33,100
1887	27,845	1900	53,707
1888	23,151	1901	72,187
1889	41,370	1902	72,601
1890	22,871	1903	84,437
1891	46,104	1904	86,057
1892	50,441		

Duty.			
1905	Slate and manufactures of—		
	Roofing slate	25% not over 75c per square	\$45,345
	School writing slates	25%	19,811
	Slate pencils	25%	7,567
	Slate of all kinds and manufactures of, N.E.S.	30%	20,505
Total			\$93,228

6-7 EDWARD VII., A. 1907

Flagstone—A small quantity of flagstone is quarried each year at Bishop's crossing, township of Dudsville, Wolfe county, Quebec. Statistics of production are given below.

TABLE 11.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF FLAGSTONE.

Calendar Year.	Quantity, Sq. ft.	Value.
1886.....	70,000	\$ 7,875
1887.....	116,000	11,600
1888.....	64,800	6,580
1889.....	14,000	1,400
1890.....	17,865	1,643
1891.....	27,300	2,721
1892.....	13,700	1,869
1893.....	40,500	3,487
1894.....	152,700	5,298
1895.....	80,005	6,687
1896.....		6,710
1897.....		7,190
1898.....		4,250
1899.....		7,600
1900.....		5,250
1901.....		4,575
1902.....	87,300	7,760
1903.....	79,200	6,688
1904.....	75,600	6,720
1905.....	81,000	7,650

TABLE 12.
STRUCTURAL MATERIALS.
IMPORTS OF FLAGSTONE.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1881.....	23	\$ 241	1893.....	884	8,500
1882.....	90	848	1894.....	218	2,429
1883.....	10	99	1895.....	15	84
1884.....	137	1,158	1896.....	Nil.	Nil.
1885.....	205	1,756	1897.....	13	227
1886.....	1,602	9,443	1898.....	587	1,540
1887.....	1,316	10,966	1899.....	Nil.	Nil.
1888.....	2,642	21,077	1900.....	9	63
1889.....	1,669	15,451	1901.....	14	116
1890.....	5,665	48,995	1902.....	232	1,231
1891.....	3,770	36,348	1903 to 1905*		Nil.
1892.....	1,571	15,048			

* Flagstones dressed. Duty, 20 %. (See table 3).

SESSIONAL PAPER No. 26a

CEMENT AND LIME.

The total sales of cement in 1905, both natural and Portland, amounted to 1,360,732 barrels, valued at \$1,924,014, as compared with 967,172 barrels valued at \$1,338,239 in 1904. The production of Portland cement has been increasing rapidly, while the output of natural rock cement has been as rapidly decreasing, and now forms but a small proportion of the whole.

Statistics of production since 1887 are given in Table 13 below.

TABLE 13.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF CEMENT.

Calendar Year.	Natural Rock Cement.		Portland Cement.		Total.	
	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.
		\$		\$		\$
1887.					69,843	81,909
1888.					50,668	35,593
1889.					90,474	69,790
1890.					102,216	92,405
1891.					93,473	108,561
1892.					117,408	147,663
1893.					158,597	194,015
1894.					108,142	144,637
1895.					128,294	173,675
1896.					149,090	201,651
1897.	85,450	65,893	119,763	209,380	205,213	275,273
1898.	87,125	73,412	163,084	324,168	250,209	397,580
1899.	147,387	119,308	255,366	513,983	396,753	633,291
1900.	125,428	99,994	292,124	562,916	417,552	662,910
1901.	133,328	94,415	317,066	565,615	450,394	660,030
1902.	127,931	98,932	594,594	1,028,618	722,525	1,127,550
1903.	92,252	74,655	627,741	1,150,592	719,993	1,225,247
1904.	56,814	50,247	910,358	1,287,992	967,172	1,338,239
1905.	14,184	10,274	1,346,548	1,913,740	1,360,732	1,924,014

Natural rock cement was made by three firms in Ontario only, the plant formerly operated in Manitoba being idle during the year.

The quantity manufactured during the year was 14,184 barrels, and the same quantity was sold, valued at \$10,274. Wages paid were \$4,423 and 33 men were employed.

The prices realized at the works were 70 to 80c. per barrel of 240 lbs. net. Following is a list of firms owning plants:—

Hamilton Cement Works	Hamilton, Ont.
Queenston Cement Works.	Queenston, Ont.
Battle's Thorold Cement Works..	Thorold, Ont.
The Toronto Lime Co.	Toronto, Ont.
The Manitoba Union Mining Co., Ltd	Winnipeg, Man.

Portland cement was made by twelve companies, two in Quebec nine in Ontario, and one in British Columbia, and slag cement was made by one company in Nova Scotia. The increase in the sales of Portland cement in 1905 as compared with 1904 was 436,190 barrels and \$625,748 in value, or about 48 per cent.

The total capacity of the thirteen plants in operation was about 8,000 barrels per day. A number of plants were operated for a portion of the year only while one plant in Ontario was idle during the whole year undergoing reconstruction.

Detailed statistics of production in 1904 and 1905 are as follows :

	1904.	1905.
Portland Cement sold brls.	910,358	\$1,346,548
" " manufactured "	908,990	1,541,568
Stock on hand, Jan. 1 "	113,419	111,446
" " Dec. 31 "	112,051	306,466
Value of Cement sold \$	1,287,992	\$1,913,740

The average price per barrel at the works in 1905 was \$1.42, being only a fraction of a cent higher than the average price in 1904.

The imports of Portland cement into Canada in 1905 were :

	Quantity.	Value.
Six months ending June . . cwt.	1,308,058	\$493,730
" " Dec. . . . "	1,903,395	644,818
Total	3,211,453	1,138,548

This is the equivalent to 917,558 barrels of 350 pounds each at an average price per barrel of \$1.24. The duty is twelve and a half cents per hundred pounds.

The imports in 1904 were equivalent to 784,630 barrels of 350 pounds each valued at \$1,061,056, or an average price per barrel of \$1.35.

As there is very little cement exported from Canada, the consumption of this product in the country in 1905, would be approximately 1,346,548 barrels of home product and 917,558 barrels of imported, or a total of 2,264,106 barrels.

SESSIONAL PAPER No. 26a

Following is an estimate of the consumption of Portland cement in Canada for the past eight years expressed in barrels of 350 lbs. net.

	Canadian	Imported	Total
	barrels.	barrels.	barrels.
1898.....	163,084	†306,588	469,672
1899.....	225,366	†371,550	626,916
1900.....	292,124	†371,817	663,941
1901.....	317,066	*555,900	872,966
1902.....	594,594	*544,954	1,139,548
1903.....	627,741	*773,678	1,401,419
1904.....	910,358	*784,630	1,694,988
1905.....	1,346,548	*917,558	2,264,106

†Fiscal year ending June 30th.

*Calendar year.

The exports and imports of Cement are shown in the following tables. In 1903 and previous years there was more imported cement used than Canadian product. In 1904 and 1905, however, the situation was changed and more Canadian cement was used than imported, the proportion of imported Portland cement used in 1905 being about 40 per cent of the total consumption.

TABLE 14.
STRUCTURAL MATERIALS.
EXPORTS OF CEMENT.

Calendar Year.	Value.
1891.....	\$ 2,881
1892.....	938
1893.....	1,172
1894.....	482
1895.....	937
1896.....	1,328
1897.....	644
1898.....	2,117
1899.....	2,733
1900.....	3,296
1901.....	1,514
1902.....	2,267
1903.....	2,851
1904.....	5,494
1905.....	3,143

TABLE 15.

STRUCTURAL MATERIALS.
IMPORTS OF CEMENT IN BULK OR BAGS.

Fiscal Year.	Bushels.	Value.	Fiscal Year.	Bushels.	Value.
1880.....	65	\$ 28	1893.....	12,534	\$ 2,909
1881.....	579	298	1894.....	9,027	2,618
1882.....	386	86	1895.....		2,112
1883.....	1,759	548	1896.....		3,672
1884.....	4,626	1,236	1897.....		4,318
1885.....	4,598	1,315	1898.....		3,263
1886.....	6,808	1,851	1899.....		8,929
1887.....	5,421	1,419	1900.....		10,452
1888.....	23,919	5,787	1901.....		4,890
1889.....	32,818	10,668	1902.....		12,234
1890.....	21,055	5,443	1903.....		16,281
1891.....	11,281	2,890	1904.....		14,305
1892.....	14,351	3,394	1905*		18,489

*Cement, N.E.S., and manufactures of cement, Duty 20 per cent.

TABLE 16.

STRUCTURAL MATERIALS.
IMPORTS OF HYDRAULIC CEMENT.

Fiscal Year.	Barrels.	Value.
1880.....	10,034	\$ 10,306
1881.....	7,812	7,821
1882.....	11,945	13,410
1883.....	11,659	13,755
1884.....	8,606	9,514
1885.....	5,613	5,396
1886.....	6,164	6,028
1887.....	6,160	8,784
1888.....	5,636	7,522
1889.....	5,835	7,467
1890.....	5,440	9,048
1891.....	3,515	6,152
1892.....	2,214	2,782
1893.....	4,896	8,060
1894.....	1,054	985
1895.....	5,333	7,001
1896.....	5,688	8,948
1897.....	2,494	3,937
	Cwt.	
1898.....	16,033	7,097
1899.....	1,678	694
1900.....	10,418	4,711
1901.....	17,784	6,865
1902.....	29,585	17,755
1903.....	13,690	6,333
1904.....	12,088	5,391
1905 (Cement hydraulic or waterlime)*.....	16,961	10,690

*Duty, 12½c. per 100 lbs.

SESSIONAL PAPER No. 26a

TABLE 17.
STRUCTURAL MATERIALS.
IMPORTS OF PORTLAND CEMENT.

Fiscal Year.	Barrels.	Value.	Fiscal Year.	Barrels.	Value.
1880.....		\$ 55,774	1894.....	224,150	\$280,841
1881.....		45,646	1895.....	196,281	242,813
1882.....		66,579	1896.....	204,407	242,409
1883.....		102,537	1897.....	210,871	252,587
1884.....		102,857		Cwt.	
1885.....		111,521	1898.....	1,073,058	355,264
1886.....		120,398	1899.....	1,300,424	467,994
1887.....	102,750	148,054	1900.....	1,301,361	498,607
1888.....	122,402	177,158	1901.....	1,612,432	654,595
1889.....	122,273	179,406	1902.....	1,971,616	833,657
1890.....	192,322	313,572	1903.....	2,316,853	868,131
1891.....	183,728	304,648	1904.....	2,476,388	995,017
1892.....	187,233	281,553	1905 (Portland)*.	3,228,394	1,234,649
1893.....	229,492	316,179			

* Duty, 12½c. per 100 lbs.

We give below a list of the companies engaged in the manufacture of Portland cement during 1905.

Sydney Cement Co., Sydney, C.B.

Crescent Cement Works, Longue Point, Que.

International Portland Cement Co., Toronto, Ont., and Hull, Que.

Canadian Portland Cement Co., Deseronto, Ont.

Lakefield Portland Cement Co., Lakefield, Ont.

Imperial Portland Cement Co., Owen Sound, Ont.

Owen Sound Portland Cement Co., Ltd., Owen Sound, Ont.

Grey and Bruce Portland Cement Co., Ltd., Owen Sound, Ont.

Sun Portland Cement Co., Ltd., Owen Sound, Ont.

Hanover Portland Cement Co., Hanover, Ont.

National Portland Cement Co., Toronto and Durham, Ont.

Belleville Portland Cement Co., Belleville, Ont.

Ontario Portland Cement Co., Brantford, Ont.

Vancouver Portland Cement Co., Victoria, B.C.

Companies with works in process of erection, and companies proposing to erect plants :—

Colonial Portland Cement Co., Wiarton, Ont.

Raven Lake Portland Cement Co., Toronto and Victoria Road, O.

Superior Portland Cement Co., Orangeville, Ont.

Standard Portland Cement Co., Toronto, Ont.

Lehigh Portland Cement Co., Belleville, Ont.

Manitoba Portland Cement Co., Winnipeg, Man.

Alberta Portland Cement Co., Calgary, Alta.

Western Canada Coal and Cement Co., Exshaw, Alta.

In Nova Scotia a plant has been established by the Sydney Cement Co., at Sydney, for the manufacture of cement from blast furnace slag. This is the first plant of its kind to be established in Canada, although slag cement or Puzzolan cement (the latter name having been adopted in the United States) have been manufactured for some years both in the United States and in Europe.

TABLE 18.

STRUCTURAL MATERIALS.

PRODUCTION OF ROOFING CEMENT.

Calendar Year.	Tons.	Value.
1890.....	1,171	\$ 6,502
1891.....	1,020	4,810
1892.....	800	12,000
1893.....	951	5,441
1894.....	815	3,978
1895.....		3,153
1896.....	86	430
1897 to 1905 inclusive.....	Nil.	Nil.

TABLE 19.

STRUCTURAL MATERIALS.

ANNUAL PRODUCTION OF LIME.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$283,755	1896 estimated.....	650,000
1887.....	394,859	1897 ".....	650,000
1888.....	339,951	1898 ".....	650,000
1889.....	362,848	1899 ".....	800,000
1890.....	412,308	1900 ".....	800,000
1891.....	251,215	1901 ".....	830,000
1892.....	411,270	1902 ".....	892,000
1893 estimated.....	900,000	1903 ".....	900,000
1894 ".....	900,000	1904 ".....	780,000
1895 ".....	700,000	1905 ".....	750,000

SESSIONAL PAPER No. 26a

TABLE 20.
STRUCTURAL MATERIALS.
EXPORTS OF LIME.

Calendar Year.	Value.
1891.....	\$119,853
1892.....	121,535
1893.....	86,623
1894.....	83,670
1895.....	71,997
1896.....	70,820
1897.....	53,177
1898.....	49,594
1899.....	73,565
1900.....	80,852
1901.....	99,194
1902.....	116,009
1903.....	131,412
1904.....	73,838
1905.....	85,723

TABLE 21.
STRUCTURAL MATERIALS.
IMPORTS OF LIME.

Fiscal Year.	Barrels.	Value.
1880.....	6,100	\$ 6,013
1881.....	5,796	4,177
1882.....	5,064	5,365
1883.....	7,623	9,224
1884.....	10,804	11,200
1885.....	12,072	11,503
1886.....	11,021	9,347
1887.....	10,835	8,524
1888.....	10,142	7,537
1889.....	13,079	9,363
1890.....	8,149	5,360
1891.....	6,259	4,273
1892.....	6,132	4,241
1893.....	6,879	4,917
1894.....	6,766	4,907
1895.....	12,008	5,743
1896.....	10,239	7,331
1897.....	16,108	10,529
1898.....	12,850	9,002
1899.....	15,720	11,124
1900.....	12,865	11,211
1901.....	19,657	14,534
1902.....	24,602	17,584
1903.....	31,108	22,470
1904.....	54,359	39,639
1905.....Duty, 20 p.c.	98,676	71,588

BRICK AND CLAY PRODUCTS.

Statistics of the production of brick in Canada are given in Table 22. As already explained these have in the past been largely estimated, the figures for 1903, however, represent for the eastern and western provinces, direct returns and for Ontario and Quebec include the figures of brick production as published by the Mining Bureaus of these provinces. The figures of production for 1905, therefore, can safely be taken as underestimated although they are nearly a million dollars higher than the output published for 1904.

TABLE 22.

STRUCTURAL MATERIALS.

ANNUAL PRODUCTION OF BUILDING BRICKS.

Calendar Year.	Value.
1886.....	\$ 873,600
1887.....	986,689
1888.....	1,036,746
1889.....	1,273,884
1890.....	1,266,982
1891.....	1,061,536
1892.....	1,251,934
1893.....	1,800,000
1894.....	1,800,000
1895.....	1,670,000
1896.....	1,600,000
1897.....	1,600,000
1898.....	1,900,000
1899.....	2,195,000
1900.....	2,275,000
1901.....	2,400,000
1902.....	2,593,000
1903.....	2,832,000
1904.....	2,983,000
1905.....	3,933,925

SESSIONAL PAPER No. 26a

TABLE 23.
STRUCTURAL MATERIALS.
EXPORTS OF BRICKS.

Calendar Year.	M.	Value.
1891.....	246	\$ 1,163
1892.....	1,963	12,192
1893.....	6,073	44,110
1894.....	1,095	7,405
1895.....	1,655	8,665
1896.....	983	5,678
1897.....	573	2,679
1898.....	65	442
1899.....	172	1,351
1900.....	546	4,528
1901.....	646	5,189
1902.....	2,110	12,786
1903.....	891	5,699
1904.....	696	5,357
1905.....	754	5,888

TABLE 24.
STRUCTURAL MATERIALS.
IMPORTS OF BUILDING BRICK.

Fiscal Year.	Value.
1880.....	\$ 2,067
1881.....	4,251
1882.....	24,572
1883.....	14,234
1884.....	20,258
1885.....	14,632
1886.....	5,929
1887.....	2,440
1888.....	20,720
1889.....	24,585
1890.....	12,500
1891.....	9,744
1892.....	5,075
1893.....	14,108
1894.....	18,320
1895.....	4,705
1896.....	23,189
1897.....	10,336
1898.....	6,652
1899.....	21,306
1900.....	19,305
1901.....	20,677
1902.....	33,802
1903.....	28,493
1904.....	117,468
1905.....Duty, 20 p.c.	168,122

TABLE 25.
STRUCTURAL MATERIALS,
IMPORTS OF PAVING BRICK.*

Fiscal Year.	Value.
1898	\$ 2,337
1899	23,648
1900	35,644
1901	10,414
1902	16,788
1903	18,811
1904	29,753
1905	32,578

*Duty 20 p.c.

TABLE 26.
STRUCTURAL MATERIALS.
PRODUCTION OF TERRA COTTA, &c.

Calendar Year.	Value.	Calendar Year.	Value.
1888	\$ 49,800	1897	155,595
1889	Not available.	1898	167,902
1890	90,000	1899	220,258
1891	113,103	1900	259,450
1892	97,239	1901	278,671
1893	55,704	1902	276,241
1894	65,600	1903	405,796
1895	195,123	1904	(a)
1896	83,855	1905	(a)

(a) Included in Table 22.

TABLE 27.
STRUCTURAL MATERIALS.
PRODUCTION OF SEWER PIPES, &c.

Calendar Year.	Value.
1888	\$266,320
1889	Not available.
1890	348,000
1891	227,300
1892	367,660
1893	350,000
1894	250,325
1895	257,045
1896	153,875
1897	164,250
1898	181,717
1899	161,546
1900	231,525
1901	248,115
1902	301,965
1903	317,970
1904	440,894
1905	382,000

SESSIONAL PAPER No. 26a

TABLE 28.
STRUCTURAL MATERIALS.
IMPORTS OF DRAIN TILES AND SEWER PIPES.

Fiscal Year.		Value.
1880.....		\$ 33,796
1881.....		37,368
1882.....		70,065
1883.....		70,699
1884.....		71,755
1885.....		69,589
1886.....		57,953
1887.....		71,203
1888.....		101,257
1889.....		83,215
1890.....		77,434
1891.....		87,195
1892.....		59,537
1893.....		39,001
1894.....		24,625
1895.....		21,053
1896.....		19,296
1897.....		34,286
1898.....		29,611
1899.....		33,898
1900.....		39,149
1901.....		56,083
1902.....		55,530
1903.....		57,352
1904.....		55,595
1905 { Drain tile, not glazed..... Drain pipes, sewer pipes, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed.....		Duty.
		20 %
		35 %
		Total.....
		\$ 1,229
		101,166
		\$102,395

TABLE 29,
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF POTTERY.

Calendar Year.	Value.	Calendar Year.	Value.
1888.....	\$ 27,750	1897.....	129,629
1889.....	Not available	1898.....	214,675
1890.....	195,242	1899.....	185,000
1891.....	258,844	1900.....	200,000
1892.....	265,811	1901.....	200,000
1893.....	213,186	1902.....	200,000
1894.....	162,144	1903.....	200,000
1895.....	151,588	1904.....	140,000
1896.....	163,427	1905.....	120,000

TABLE 30.
STRUCTURAL MATERIALS.
IMPORTS OF EARTHENWARE.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.	\$322,333	1893.	\$709,737
1881.	439,029	1894.	695,514
1882.	646,734	1895.	547,935
1883.	657,886	1896.	575,493
1884.	544,586	1897.	595,822
1885.	511,853	1898.	675,874
1886.	599,269	1899.	916,727
1887.	750,691	1900.	959,526
1888.	697,082	1901.	1,114,677
1889.	697,949	1902.	1,275,093
1890.	695,206	1903.	1,406,610
1891.	634,907	1904.	1,611,356
1892.	748,810		

1905	Earthenware and china :—		Duty.	
	Baths, tubs and washstands, of earthenware, stone			
	cement or clay, or of other material, N.O.P.....	30 %	\$	73,569
	Brown or coloured earthen and stoneware, and			
	Rockingham ware.....	30 %		15,464
	Decorated, printed or sponged, and all earthenware,			
	N.E.S.....	30 %		169,102
	Demijohns, churns and crocks.....	30 %		8,158
	White granite or ironstone ware, C.C. or cream			
	coloured ware.....	30 %		37,706
Tableware of China, porcelain or other clay,.....		30 %		995,465
China and porcelain ware.....		30 %		199,960
Earthenware tiles.....		35 %		65,181
Manufactures of earthenware, N.E.S.		30 %		71,609
Total.....				1,636,214

TABLE 31.
STRUCTURAL MATERIALS.
EXPORTS OF SAND AND GRAVEL.

Calendar Year.	Tons.	Value.
		\$
1893.	329,116	121,795
1894.	324,656	86,940
1895.	277,162	118,359
1896.	224,769	80,110
1897.	152,963	76,729
1898.	165,954	90,498
1899.	242,450	101,640
1900.	197,558	101,666
1901.	197,302	117,465
1902.	159,793	119,120
1903.	355,792	124,006
1904.	399,809	129,803
1905.	306,935	152,805

INDEX

	PAGE.
Letter of Transmittal	3
Explanatory Notes.....	5
Summary of Production.....	Opposite 8
General Review of the Mineral Industry of Canada.....	7-13

METALLIC PRODUCTS.

Precious Metals—	
Gold.....	14-24
Silver	24-28
Copper	28-35
Iron.....	36-56
Lead.....	57-64
Nickel.....	65-67
Zinc.....	68-72
Miscellaneous Metallic—	
Aluminium.....	73
Antimony	73
Cobalt.....	74
Mercury.....	75
Platinum.....	76
Palladium	77
Tin.....	78

NON-METALLIC PRODUCTS.

Abrasive Materials—	
Corundum.....	79-80
Grindstones (statistics).....	80-84
Tripolite.....	85
Grindstone Quarries.....	85-88
Asbestos	89-92
Coal and Coke.....	93-112
Chromite.....	113
Graphite.....	115
Gypsum.....	117
Manganese	121
Mica.....	123
Mineral Pigments—	
Ochres.....	125
Barytes.....	127
Mineral Water.....	129
Natural Gas.....	130
Petroleum.....	131
Phosphate.....	138
Pyrites.....	140
Salt	142

6-7 EDWARD VII., A. 1907

Miscellaneous Non-Metallic—	
Arsenic	145
Chalk (imports).....	146
Whiting (imports).....	147
Feldspar	147
Fire-clay	148
Moulding Sand.....	149
Quartz	149
Soapstone and Talc	150
Structural Materials—	
Building Stone.....	152
Marble.....	154
Granite	155
Slate.....	158
Flagstone.....	160
Cement.....	161-166
Lime.....	166
Bricks and other Clay Products	168-172
Sands and Gravel (imports)	172

SELECTED LIST OF REPORTS

(SINCE 1885)

OF SPECIAL ECONOMIC INTEREST

PUBLISHED BY

THE GEOLOGICAL SURVEY OF CANADA

MINERAL RESOURCES BULLETINS

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105.2

CANADA
DEPARTMENT OF MINES
MINES BRANCH

HON. W. TEMPLEMAN, MINISTER; A. P. LOW, LL.D., DEPUTY MINISTER;
EUGENE HAANEL, PH.D., DIRECTOR.

ANNUAL REPORT
ON THE
MINERAL PRODUCTION OF CANADA

During the Calendar Year

1906



OTTAWA

PRINTED BY S. E. DAWSON, PRINTER TO THE KING'S MOST
EXCELLENT MAJESTY

1909

[No. 26b—1908]

No. 26.

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1909

Dr. EUGENE HAANEL,
Director of Mines,
Ottawa.

SIR,—I beg to hand you herewith, the annual report, giving complete and revised information descriptive of the mineral production in Canada during the calendar year ending December 31, 1906. Much of the material presented herewith has already appeared in other forms, a preliminary statement of the mineral production during 1906 having been compiled and issued early in March 1907.

Owing to the fact that mining companies frequently do not know the actual results of production until several months after the ore is shipped, and to the difficulties incidental to the obtaining of information through correspondence, it naturally follows that complete data relating to the mineral industries cannot be obtained until well on in the year following that dealt with, so that the issue of the final report is necessarily delayed. In the present instance, however, the delay has been regrettably prolonged.

Mr. Ingall, formerly in charge of the Mines Section of the Geological Survey, was absent on sick leave during the first half of the year following the period dealt with herein, and on June 19, the work of the Division was transferred to the Mines Branch of the newly organized Department of Mines. Mr. Ingall relinquished his position as officer in charge of the Section, and was transferred to field duties in the Geological Survey Branch, while Mr. Denis was detached, to take charge of the collection of coal samples for the work of investigation of fuels by the Mines Branch.

In addition to the collection of the material, the compilation of the statistics, and the preparation of the reports of the Section, the staff has been kept busy in many other kindred directions, such as answering numerous inquiries, both through correspondence and in person regarding the mineral resources, and the mining and metallurgical industries of the Dominion, as well as in collecting, filing, and indexing all available information regarding the same. The checking of the reports from the assay office at Vancouver has also been added to the duties of the Division.

The desirability of improving and increasing the scope of the statistical work, and the necessity—for that purpose—of increasing the present depleted staff, have been clearly set forth in your Summary

7-8 EDWARD VII., A. 1908

Report on the work of the Mines Branch for the fiscal year 1907-8, and need not be further referred to, except to reiterate the necessity of having officers permanently attached to the Department to carry on, and keep up to date the work indicated in the general report on the Mining and Metallurgical Industries of Canada (No. 24)—now in the press.

I am, Sir,

Your obedient servant,

JOHN McLEISH.

Division of Mineral Resources and Statistics,
Ottawa, July 23, 1908.

EXPLANATORY NOTES.

YEAR AND TON USED.

The year referred to throughout this report is the calendar year, except for the figures of imports, which refer to the fiscal year ending June 30. The ton is that of 2,000 pounds, unless otherwise stated.

EXPORTS AND IMPORTS.

The figures given throughout the report referring to exports and imports are compiled from data obtained from the reports of the Customs Department, and will occasionally show discrepancies, which, however, there are no means of correcting.

The exports and imports formerly entered under the headings of each province did not necessarily represent the production or consumption of the province; e.g., material produced in Ontario was often shipped from Montreal and entered there for export, so falling under the heading, Quebec.

NOTE.—N.E.S. = Not elsewhere specified.

VALUES ADOPTED.

The values of the metallic minerals produced, as per returns to this Department, are calculated on the basis of their metallic contents at the average market price of the metal for the current year in the New York market. Spot values have been adopted for the figures of production of the non-metallic minerals.

GENERAL NOTES.

As in the past, care is taken to avoid interference with private interests in the manner of publishing results, and all returns of production of individual mines are treated as confidential, unless otherwise arranged with those interested. The confidence of the mining community, thus gained, has resulted in an increasingly general response to our circulars, although, to complete our data, personal application is still advisable in a few instances, and a yet more prompt response on the part of all applied to, will help still further towards an earlier publication of the material.

The figures given throughout the report are based as far as possible upon returns obtained direct from the various operators, or from official data, and the totals are checked by comparison with railway shipments, exports, and all other available sources of information. It can be, therefore, fairly claimed that they are as accurate as it is possible to make such figures.

After investigation of the subject we have, however, found that in the nature of things, export and railway figures can only be taken as approximately correct in most instances. In the case of the export figures entries are made, as a rule, by those having no technical knowledge of mineral substances, and in the case of the railways but few of the shipments are actually weighed, so that car-load lots, for instance, may differ considerably from the theoretical load of the car.

CORRECTIONS—ALTERATIONS.

Corrections and alterations have been made throughout this report wherever they seemed to be called for, according to more complete and reliable data, available since previous issues.

The tabulated statement given in the folded sheet at the beginning of the report represents a compilation of all the similar statements found in previous reports, re-modelled and further revised wherever possible.

INTRODUCTION.

It can truly be said that the condition of the mining industry in Canada in 1906 was one of great prosperity, and that it, in fact, achieved greater progress, and gave bigger results, than during any previous year on record. In 1905, the total mineral output in Canada aggregated \$69,078,999, as compared with a little over \$60,000,000 in 1904; but in 1906, the output reached a total value of \$79,286,697, an increase of \$10,207,698, or 14·7 per cent over the production of the previous year. This large increase is particularly gratifying because it occurred despite a continued falling off in the total gold output of the country. There was, during the year, an active demand for nearly all mining products, and the higher prices realized, especially for the metals and their ores, not only helped to increase the actual value of the year's output, but also greatly stimulated development and prospecting throughout the country.

The total annual mineral production since 1895 is shown in the general table (folded herewith). The value of the production in 1895 was \$20,505,917. A steady annual increase in production is shown during the following years, until a maximum output of \$65,804,611 was reached in 1901. The next three years showed slight decreases, until in 1904 the production had fallen to \$60,073,897. The next year, however, a large increase placed the output beyond the former high mark, followed by a still larger increase in 1906.

Examining the statistics of production during the year under review, in detail, we find that \$41,949,563, or 52·9 per cent of the total value, is to be attributed to the value of the metals contained in the metallic ores shipped; \$37,037,134, or 46·7 per cent of the total value, was contributed by the non-metallic minerals, of which \$11,530,528 represented the value of the structural or building materials and clay products, and \$25,506,606 the value of the minerals such as coal, asbestos, gypsum, petroleum, natural gas, etc., etc. The relative importance in value of output of the different items contributing to the total mineral production is shown in the following table, entitled 'Proportionate value of different mineral products.'

PROPORTIONATE VALUE OF DIFFERENT MINERAL PRODUCTS, 1906.

Products.	Contributing over 15 p. c.	Contributing between 10 p. c. and 1 p. c.	Contributing under 1 p. c.
1 Coal.....	24·88		
2 Gold.....	14·51		
3 Copper.....	13·52		
4 Nickel.....	11·28		
5 Silver.....		7·14	
6 Bricks.....		5·17	
7 Portland cement.....		3·99	
8 Lead.....		3·89	
9 Asbestos and Asbestic.....		2·59	
10 Pig iron.....		2·35	
11 Building stone.....		2·31	
12 Lime.....		1·27	
13 Petroleum.....			0·96
14 Gypsum.....			0·81
15 Natural gas.....			0·74
16 Sewer pipe.....			0·66
17 Salt.....			0·42
18 Mica.....			0·38
19 Tiles.....			0·36
20 Granite.....			0·35
21 Limestone for flux.....			0·32
22 Corundum.....			0·25
23 Sundry under 1 p. c.....			1·85
Total.....	64·19	28·71	7·10

It will be observed that nearly one-fourth of our total mineral production is to be attributed to the mining of coal. Gold, which in 1903 and several preceding years occupied first place in point of value, contributed about $14\frac{1}{2}$ per cent of the total, and is closely followed by copper with $13\frac{1}{2}$ per cent, and nickel over 11 per cent; while silver and lead together, accounted for about 11 per cent of the total.

To the metallic ores, together with the fuels, therefore, is to be credited over 79 per cent of our total output. The relative importance of the other items is clearly set forth in the table, and does not require special reference except as regards pig iron. From a metallurgical point of view, the production of pig iron is a much more important industry than is here set forth, ranking probably in second place, but as a large proportion of the iron is made from imported ore, only that quantity that can be attributed to Canadian ore has been included in these general tables.

Comparing the mineral production in 1906 with the production in 1905, large increases are shown in nearly all the important mineral products, the chief exceptions being gold, lead with a decreased output though a higher aggregate value, and petroleum. Thirteen items show a total increase of \$12,292,040, and four items a decrease of \$2,870,965. These are shown in tabular form as follows, while in a separate table

SESSIONAL PAPER No. 26b

the percentage increases or decreases in both quantity and value are shown.

INCREASES AND DECREASES IN VALUE OF PRODUCTION IN 1906 AS COMPARED
WITH 1905.

Products.	Increases.	Decreases.
	Value	Value.
Copper.....	\$3,222,814	
Gold.....		\$2,657,075
Pig iron (from Canadian ore).....	824,400	
Lead.....	412,555	
Nickel.....	1,398,308	
Silver.....	2,044,572	
Zinc.....		115,400
Asbestos and asbestic.....	556,884	
Coal.....	2,211,756	
Corundum.....	53,820	
Gypsum.....	57,126	
Natural gas.....	203,962	
Petroleum.....		94,268
Pyrites.....	44,504	
Salt.....	8,272	
Cement, natural.....		4,222
Cement, Portland.....	1,251,067	
Total.....	12,292,040	2,870,965

PROPORTIONAL INCREASES AND DECREASES OF DIFFERENT MINERAL PRODUCTS
1906-1905.

Products.	QUANTITY.		VALUE.	
	Increase.	Decrease.	Increase.	Decrease.
	p.c.	p.c.	p.c.	p.c.
Metallic:—				
Copper.....	15·630		48·055	
Gold.....		18·765		18·765
Pig iron (from Canadian ore).....	53·527		79·874	
Pig iron (from both Canadian and imported ore).....	13·916		22·855	
Lead.....		3·968	15·413	
Nickel.....	13·851		18·519	
Silver.....	41·466		56·559	
Non-metallic:—				
Asbestos and asbestic.....	20·394		37·045	
Coal.....	12·628		12·623	
Corundum.....	38·321		37·424	
Gypsum.....	6·075		9·745	
Mica.....			70·512	
Natural gas.....			53·736	
Petroleum.....		10·147		11·012
Salt.....	13·991		2·578	
Portland cement.....	57·422		65·372	
Granite.....			23·028	

An important feature of the mining industry during 1906 was the large increase in the prices of the metals during the year, as evidenced by the following quotations. The average prices of the chief metals for 1905 were as follows: silver 60·35 cents per ounce; copper 15·59 cents per pound; lead 4·7 cents per pound; spelter 5·82 cents per pound; nickel 40 cents per pound. During 1906, the prices of all these metals advanced considerably, and in December, 1906, the quotations were as follows: silver over 70 cents per ounce; copper over 22 cents per pound; lead 5·75 cents per pound; spelter 6·4 cents per pound; and nickel from 45 to 50 cents per pound. The higher prices are also clearly shown in the table of proportional increases, where it is seen that while copper increased about 15 per cent in quantity, the increase in total value was over 13 per cent. In the case of lead a decrease in quantity of nearly 4 per cent is shown, but the aggregate value increased over 15 per cent. There was an increased output of silver of 41 per cent in quantity, and over 56 per cent in value, and in nickel an increase of nearly 14 per cent in quantity and over 18 per cent in value. The largest proportional increases are shown by mica, Portland cement, natural gas, and silver.

Although the mining bureaus of several of the provinces publish very complete mining statistics, these are unfortunately neither compiled nor valued on a uniform basis, and comparisons are not easily made. The statistics of production presented herewith, however, being valued on a uniform basis for the whole of Canada, it is possible to compare the different provinces in their importance as mineral producers, and the following table is presented showing the production by provinces for the years 1905 and 1906.

MINERAL PRODUCTION BY PROVINCES 1905-1906.

Province.	1905.		1906.	
	Value of Production.	Per cent of total.	Value of Production.	Per cent of total.
	\$		\$	
Nova Scotia.....	11,507,047	16·66	12,894,303	16·26
New Brunswick.....	559,035	·81	646,328	0·82
Quebec.....	4,405,975	6·38	5,242,058	6·61
Ontario.....	18,833,292	27·26	25,111,682	31·67
Manitoba, Alberta, Sask- atchewan and Yukon...	11,387,642	16·48	10,092,726	12·73
British Columbia.....	22,386,008	32·41	25,299,600	31·91
Total.....	69,078,999	100·00	79,286,697	100·00

SESSIONAL PAPER No. 26b

The principal change to be noted in 1906 compared with 1905, is the relatively larger output in the Province of Ontario in 1906, this province now having practically as large an output as British Columbia. In fact, were the production of iron in Canadian furnaces from imported ore to be included as a Canadian mineral production, the province of Ontario would undoubtedly take first place, and the relative importance of Nova Scotia would also be very considerably increased. Also the relative importance of Quebec Province would be somewhat augmented were aluminium included, of which there is a large production at Shawenegan Falls, from imported bauxite.

A very large proportion of the mineral production in Canada is exported, and the two tables following have been compiled from the Trade and Navigation reports, the first showing the exports during the calendar year, arranged by mineral products, and the second showing the exports during the fiscal year classified according to destination of shipments.

EXPORTS.

MINERALS AND MINERAL PRODUCTS OF CANADA DURING CALENDAR YEAR 1906.

Products.	Value.	Products.	Value.
Aluminium	\$ 901,357	Manufactures of metals other than iron and steel.	\$ 55,183
Antimony ore	17,064	Mica	581,919
Arsenic	5,981	Mineral pigments	2,379
Asbestos	1,689,257	" water	5,629
Barytes	6,750	Nickel	2,534,684
Bricks	6,541	Oil, crude	141
Cement	7,551	" refined	1,401
Clay, Mfrs of	125	Ores unspecified	384,629
Chromite	10,188	Platinum	14,888
Coal	4,738,497	Phosphate	2,468
Coke	168,571	Plumbago, crude	5,274
Copper	7,303,366	" mfrs. of	65,349
Feldspar	60,312	Pyrites	3,437
Gold	11,223,781	Salt	139,712
Grindstones	31,978	Sand and gravel	5,686,444
" rough	9,281	Silver	3,312
Gypsum, crude	462,814	Stone, unwrought	24,460
" ground	2,934	" wrought	762
Iron and steel	1,552,963	Sulphuric acid	146,337
Iron ore	149,177	Other articles	
Lead	736,007		
Lime	57,072		
Manganese ore	925	Total	38,800,900

EXPORTS.

DESTINATION OF MINE PRODUCTS DURING THE FISCAL YEAR 1905-1906.

Destination.	Value.	Destination.	Value.
United States.....	\$ 32,869,004	Mexico	\$ 11,235
Great Britain.....	1,475,839	British West Indies.....	7,394
Newfoundland.....	468,383	Australia.....	5,927
Germany.....	124,257	Austria Hungary.....	4,950
China.....	114,270	Cent. Am. States.....	2,000
Belgium.....	91,885	Holland.....	1,506
Japan.....	81,185	Norway.....	450
Bermuda.....	71,609	New Zealand.....	398
France.....	56,447	Hong Kong.....	280
St. Pierre Miquelon.....	26,985	British Guiana.....	15
Italy.....	24,907		
British Africa.....	18,452	Total.....	\$ 35,469,631
Cuba.....	12,253		

As would naturally be expected, the first table shows that the metallic ores constitute the bulk of the exports, while the second table indicates that over 92 per cent of the total exports went to the United States, and only 4 per cent to Great Britain.

There is but one metal refinery in Canada, viz., at Trail, British Columbia, at which fine gold, fine silver and pig lead are produced; but the great bulk of the products of the metallurgical furnaces in this province are shipped to the United States for refining. In Ontario also, practically all the metallic ore production, comprising chiefly the nickel copper ores of Sudbury district, and the rich silver ores of Cobalt, though partially reduced in Canada, are ultimately exported to the United States or Great Britain for refining. So also many of the non-metallic minerals, asbestos, gypsum, mica, corundum, are largely exported.

Statistics of imports of minerals and mineral products during the fiscal year ending June 30, 1906, compiled from the same source, are shown in the last table.

Since we export practically all our metallic ores, it naturally follows that we are compelled to import a large value in metals and their manufactures. Thus we find that in 1905-06, out of a total importation of minerals and mineral products of \$89,389,504, iron and steel and their manufactures make up over 43 millions, while coal and coke account for another 20 millions. Copper, gold, lead, brass, tin, zinc, and their manufactures, make up nearly ten millions more.

SESSIONAL PAPER No. 26b

IMPORTS.

MINERAL AND MINERAL PRODUCTS FOR FISCAL YEAR 1905-1906.

Products.	Value.	Products.	Value.
Alumina.....	\$ 194,083	Lime.....	\$ 93,630
Alum and aluminous cake.	51,914	Litharge.....	39,836
Aluminium.	192,044	Lithographic stone.....	6,772
Antimony.....	42,517	Manganese, oxide of	5,508
" salts.....	13,780	Magnesia	8,727
Arsenic.....	19,169	Marble and mfrs. of	189,589
Asbestos and mfrs. of.....	137,974	Mercury.....	69,505
Asphaltum.....	172,641	Metallic alloys—	
Bells and gongs.....	109,129	Babbitt metal	59,662
Bismuth.....	949	Brass and mfrs. of.....	1,785,005
Blast furnace slags.....	19,005	Britannia metal	40,462
Borax.....	78,277	German silver.....	84,295
Bricks and tiles.....	460,410	Type metal.....	8,675
" fire.....	539,962	Mineral and bituminous	
Buhrstones.....	2,661	substances, N.O.P.....	77,694
Cement.....	995,731	Mineralogical specimens...	726
Chalk, prepared.....	32,906	Mineral and metallic pig-	
Clays.....	220,504	ments, paints and colours	1,237,796
Coal.....	19,153,832	Mineral water, including	
" tar pitch.....	154,628	Aerated water.....	178,639
Coke.....	1,311,375	Nickel.....	15,976
Copper and mfrs. of.	3,102,137	Ores of metals, N.E.S....	2,270,036
Cryolite.....	22,793	Paraffine wax.....	9,721
Crucibles, clay or plumbago	32,950	" candles.....	15,804
Chloride of lime.....	59,315	Petroleum and products of.	2,575,350
Earthenware.....	1,692,359	Phosphate (fertilizer)	20,497
Electric carbons.....	118,757	Platinum, mfrs. of.....	54,494
Emery.....	63,861	Precious stones.....	1,601,545
Feldspar, quartz, flint, etc.	30,801	Pumice.....	9,053
Fullers earth.....	4,644	Salt.....	412,019
Fossils.....	15	Saltpetre.....	109,005
Gold and silver and mfrs. of	555,701	Sand and gravel.....	173,727
Graphite and mfrs. of.....	55,756	Slate and mfrs. of.....	112,941
Gypsum, plaster of Paris, &c	67,549	Stone and mfrs. of.....	370,190
Iron and steel—		Sulphate of copper.....	95,049
Pigs, scraps, blooms, &c.	2,451,416	" iron.....	2,493
Rolled, bars, plates, &c.,		Sulphur.....	436,827
including chrome steel	12,342,364	Sulphuric acid.....	8,558
Ferro-silicon, ferro-man-		Tufa calcareous.....	30
ganese, &c.....	462,739	Tin and manufactures of.	3,336,948
Manufactures of, machi-		Whiting.....	44,876
nery, hardware, &c....	27,978,941	Zinc and mfrs. of.....	466,627
Kainite.....	3,411		
Lead and mfrs. of.....	412,197	Total.....	89,389,504

PRECIOUS METALS.

GOLD AND SILVER.

The rarer metals of the platinum group, usually included as precious metals, are considered under the general heading of miscellaneous metals.

Refined Metals :—

Previous to 1904 there was no production of refined gold or silver in Canada, the metals being shipped out of the country, either as crude bullion or contained in ore matte, regulus, or other metallurgical product.

In 1904, however, the refinery of the Canadian Smelting Works at Trail, B.C., now the Consolidated Mining & Smelting Company of Canada, Ltd., was placed in operation, and the production of gold and silver bars of a fineness of .999 begun.

The annual production of refined gold and silver has been as follows :—

PRODUCTION OF REFINED GOLD AND SILVER AT TRAIL, B.C.

Calendar Year.	Gold.	Silver.
	Fine Ounces.	Fine Ounces.
1904.....	4,336	551,450
1905.....	8,602	1,088,328
1906.....	9,992'631	1,263,809'3

The production of gold and silver contained in ore, etc., is considered below under separate headings.

GOLD.

The Department is indebted to the various provincial Mining Bureaus for much of the statistical information given in the following tables, and to the Director of the United States Mint for a statement of receipts of gold at that institution, from the Canadian Yukon.

The value of the gold output in Canada in 1906 was \$11,502,120, representing 556,464 fine ounces; a decrease being shown from the output in 1905 of \$2,657,075, or 18·76 per cent.

The chief sources of production were the ores and placers of British Columbia and the alluvial deposits of the Yukon district, while comparatively small amounts were obtained in the other provinces. In each province or district a smaller production was made in 1906 than in 1905, the greatest falling off being from the Yukon. The gold production in Canada from 1887 to 1896 varied from a little over a million dollars to nearly three million dollars, while from 1896 to 1900, owing to the discovery and development of the Yukon district, a very rapid increase was made to \$27,908,153. Since that year, however, the output from the Yukon has steadily diminished, while the British Columbia production has slowly increased, until in 1906 the output from these two sections of the country was practically the same.

Of the total output in 1906, 40·6 per cent was derived from the Yukon district, and 48·5 per cent from British Columbia; 56·9 per cent or \$6,549,200 was obtained from placer and hydraulic workings, etc., and 43·1 per cent or \$4,952,920 from lode mining.

Tables 1 and 2 show the yearly production from 1887 to 1906, and the production by provinces in 1906.

TABLE 1.

PRECIOUS METALS.

GOLD—ANNUAL PRODUCTION IN CANADA.

Calendar Year.	*Ounces. Fine.	Value.	Calendar Year.	*Ounces. Fine.	Value.
1887.....	57,465	\$ 1,187,804	1897.....	291,582	\$ 6,027,016
1888.....	53,150	1,098,610	1898.....	666,445	13,775,420
1889.....	62,658	1,295,159	1899.....	1,028,620	21,261,584
1890.....	55,625	1,149,776	1900.....	1,350,176	27,908,153
1891.....	45,022	930,614	1901.....	1,167,320	24,128,503
1892.....	43,909	907,601	1902.....	1,032,253	21,336,667
1893.....	47,247	976,603	1903.....	911,639	18,843,590
1894.....	54,605	1,128,688	1904.....	796,445	16,462,517
1895.....	100,806	2,083,674	1905.....	685,012	14,159,195
1896.....	133,274	2,754,774	1906.....	556,464	11,502,120

*Calculated from the value at the rate of \$20.67 per ounce.

Million
Dollars

Million
Dollars

Table A.

GOLD *PRODUCTION*

<i>A. Canada</i>	<i>Value</i>
<i>B Nova Scotia</i>	<i>do</i>
<i>C. Ontario</i>	<i>do</i>
<i>D. Northwest Territories</i> }	<i>do</i>
<i>(chiefly Yukon)</i> }	
<i>E British Columbia</i>	<i>do</i>

NOTE. - In Quebec, for many years, small quantities of gold have been produced, which, however, cannot be shown on a diagram of this scale

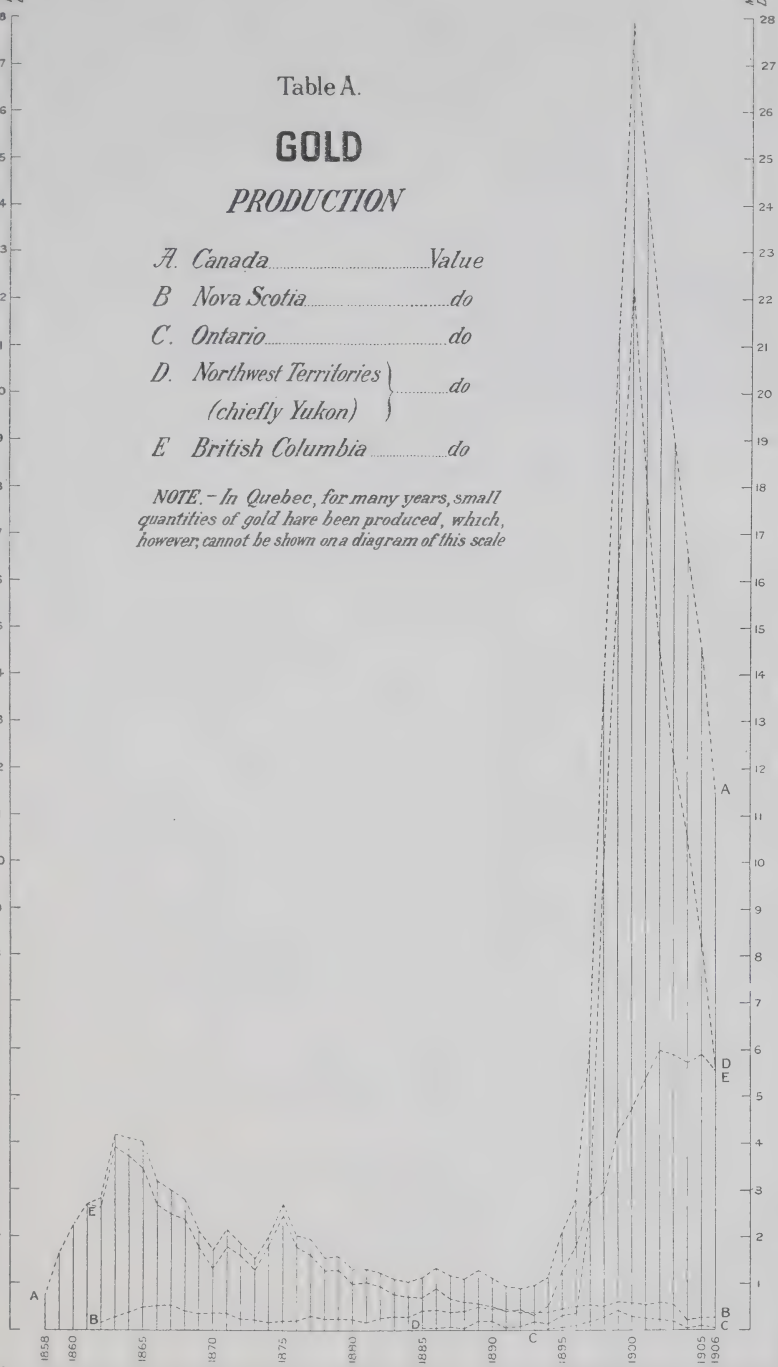


TABLE 2.

PRECIOUS METALS.

GOLD—PRODUCTION BY PROVINCES AND DISTRICTS, CALENDAR YEAR 1906.

Provinces.	*Ounces Fine.	Value.
Nova Scotia.....	(b) 12,224	\$ 252,676
Quebec.....	165	3,412
Ontario.....	(b) 3,202	66,193
Alberta.....	(a) 39	800
Yukon district.....	(a) 270,924	5,600,000
British Columbia.....	(c) 269,910	5,630,639
Total.....	556,464	11,502,120

* Calculated from the value at the rate of \$20.67 per ounce.

(a) Placer gold.

(b) Gold from vein mining.

(c) As follows: Gold from placer mining.....	\$ 948,400
" vein " 	4,630,639
	<u>\$ 5,579,039</u>

Nova Scotia :—The gold output of this Province is derived almost entirely from quartz ores. In 1906, according to returns furnished by the Nova Scotia Department of Mines, there were crushed 66,059 tons of ore which yielded 13,298 ounces 14 dwts. 7 grs. of gold, valued at \$252,676, an average of 4 dwts. 0.63 grains or \$3.82 per ton. With the exception of the year 1904, when the output was valued at \$214,209, this is the smallest production recorded since 1881.

The average output during the last three years has been less than half what it was during the previous seven years, a condition which has resulted from the closing down of one or two of the most regular and largest producers.

An examination of the records of production shows that the average value of the ore treated has been steadily decreasing.

From 1862 to 1882 the average value per ton of the yearly output ranged from \$12 to over \$20; from 1882 to 1890 the average varied from \$11 to \$15 per ton. Since 1893 the average value decreased even more rapidly, falling to \$4.90 in 1905 and \$3.82 in 1906.

These figures would seem to indicate the successful and profitable treatment of the low grade ores, and this is apparently evidenced in the Boston-Richardson mine.

This mine, situated at Isaac harbour, may be cited as a typical example of a profitable low grade property. At this mine there was treated during the twelve months ending September 1906, 35,220 tons of quartz ore, from which there was extracted 4,819 ounces of gold, or over one-third of the total production of the Province for the year. A sixty stamp mill has been kept in continuous operation throughout the year, and it was proposed to largely increase this plant. As an illustration of the operation of this mine, the value of the ore and the cost of mining and operating, the following abstract, taken from the monthly statement for August 1906 furnished to the provincial Department of Mines, is given.

No. of tons crushed.....	3,939
No. of tons concentrates produced.....	8,272
Value of ore per ton (determined by assay).....	\$ 2 94
Value of concentrates per ton	17 00
Total value recovered.....	2 55
Cost of operation of mine per ton.....	1 08
Cost of operation of mill per ton.....	0 19
Cost of operation of cyaniding plant per ton ore.....	0 10
Cost of cyaniding concentrates, per ton concentrates.....	4 39
General maintenance of plant.....	0 53
Total cost of operation per ton.....	1 90
Average crushing per stamp per 24 hours.....	298 tons.

Statistics of gold production in Nova Scotia are given in tables 3, 4, 5, and 6 following. Table 3 shows the annual gold output; table 4 the tons of quartz crushed and the average yield per ton; table 5 shows the total production of each district from 1862 to the end of 1906 as well as the average yield per ton; and table 6 shows the amount of ore crushed and its yield per district for 1906.

TABLE 3.
PRECIOUS METALS.
GOLD.—NOVA SCOTIA:—ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year.	Value.
1862.....	\$141,871	1885.....	\$432,971
1863.....	272,448	1886.....	455,564
1864.....	390,349	1887.....	413,631
1865.....	496,357	1888.....	436,939
1866.....	491,491	1889.....	510,029
1867.....	532,563	1890.....	474,990
1868.....	400,555	1891.....	451,503
1869.....	348,427	1892.....	389,965
1870.....	387,392	1893.....	381,095
1871.....	374,972	1894.....	389,338
1872.....	255,349	1895.....	453,119
1873.....	231,122	1896.....	493,568
1874.....	178,244	1897.....	562,165
1875.....	218,629	1898.....	538,590
1876.....	233,585	1899.....	617,604
1877.....	329,205	1900.....	598,553
1878.....	245,253	1901.....	546,963
1879.....	268,328	1902.....	627,357
1880.....	257,823	1903.....	527,806
1881.....	209,755	1904.....	214,209
1882.....	275,090	1905.....	283,353
1883.....	301,207	1906.....	252,676
1884.....	313,554		

SESSIONAL PAPER No. 26b

TABLE 4.
PRECIOUS METALS.

GOLD.—NOVA SCOTIA:—ORE TREATED AND YIELD OF GOLD PER TON.

Calendar Year.	Tons Treated.	Yield of Gold per ton.	Calendar Year.	Tons Treated.	Yield of Gold per Ton.
1862.....	6,473	\$21·91	1885.....	\$28,890	14·98
1863.....	17,000	16·02	1886.....	29,010	15·70
1864.....	21,431	18·21	1887.....	32,280	12·81
1865.....	24,421	20·32	1888.....	36,178	12·08
1866.....	32,157	15·28	1889.....	39,160	13·02
1867.....	31,384	16·96	1890.....	42,749	11·11
1868.....	32,259	12·41	1891.....	36,351	12·42
1869.....	35,144	19·91	1892.....	32,552	11·98
1870.....	30,824	12·56	1893.....	42,354	8·99
1871.....	30,787	12·17	1894.....	55,357	7·04
1872.....	17,089	14·94	1895.....	60,600	7·47
1873.....	17,708	13·05	1896.....	69,169	7·13
1874.....	13,844	12·87	1897.....	73,192	7·68
1875.....	14,810	14·76	1898.....	82,747	6·50
1876.....	15,490	15·08	1899.....	112,226	5·50
1877.....	17,369	18·95	1900.....	87,390	6·85
1878.....	17,989	13·63	1901.....	91,948	5·32
1879.....	15,936	16·83	1902.....	93,842	6·68
1880.....	13,997	18·42	1903.....	103,856	5·08
1881.....	16,556	12·66	1904.....	45,436	4·71
1882.....	21,081	13·04	1905.....	57,774	4·90
1883.....	25,954	11·60	1906.....	66,059	3·82
1884.....	25,186	12·44			

TABLE 5.
PRECIOUS METALS.

GOLD.—NOVA SCOTIA:—PRODUCTION OF THE DIFFERENT DISTRICTS FROM 1862 TO 1906, INCLUSIVE.

Districts.	Tons of Crushed Ore.	Total Yield.			Average Yield per ton of 2,000 lbs.
		Oz. Dwt Grs.		Value at \$19 per Oz.	
Brookfield.....	98,092	43,214	2 8	\$821,068	8·37
Caribou.....	186,847	55,622	12 5	1,056,829	5·65
Central Rawdon.....	13,340	10,121	11 21	192,310	14·42
Fifteenmile Stream.....	42,723	18,854	0 5	358,226	8·38
Lake Catcha.....	18,877	15,358	19 18	291,820	15·45
Malaga.....	24,787	17,486	12 4	332,246	13·40
Montague.....	27,626	40,510	2 4	769,692	27·86
Oldham.....	53,969	57,699	19 15	1,096,299	20·31
Renfrew.....	52,758	45,512	4 13	864,732	16·39
Salmon River.....	104,136	34,100	11 21	647,911	6·22
Sherbrooke.....	320,425	160,416	13 13	3,047,916	9·51
Stormont.....	370,739	98,292	7 11	1,867,554	5·03
Tangier.....	40,709	23,131	2 6	439,491	10·79
Uniacke.....	64,636	44,075	18 3	837,442	12·95
Waverly.....	155,908	70,833	12 23	1,345,839	8·63
Wine Harbour.....	73,019	40,659	12 3	772,532	10·57
Other Districts.....	140,339	86,681	8 17	1,646,947	11·73
Totals.....	1,788,930	862,571	11 22	16,388,854	9·16

TABLE 6.
PRECIOUS METALS.
GOLD.—NOVA SCOTIA :—DISTRICT DETAILS, CALENDAR YEAR, 1906.

Districts.	Mines	Mills.	Tons of Ore Crushed.	Total Yield of Gold.			Average Yield of Gold per Ton.		
				Oz.	Dwt	Grs.	Oz.	Dwt	Grs.
Caribou.....	4	4	10,477	836	6	22	..	1	14·31
Ecum Secum.....	1	1	156	135	9	0	..	17	8·77
Fifteenmile Stream..	1	1	240	54	0	0	..	4	12·00
Gold River.....	1	2	117	256	12	0	2	3	20·72
Harrigan Cove.....	1	1	903	253	10	0	..	5	14·75
Lake Catcha.....	1	1	264	283	0	0	1	1	11·27
Lawrencetown.....	1	1	225	42	5	0	..	3	18·13
Leipsigate.....	1	1	2,297	788	12	0	..	6	20·79
Montague.....	1	1	97	26	11	0	..	5	11·38
Oldham.....	2	1	972	960	10	18	..	19	18·34
Quaddy.....	1	1	30	1	0	0	..	..	16·00
Renfrew.....	1	1	306	72	5	0	..	4	17·33
Upper Stewiacke...	1	1	40	18	8	0	..	9	4·80
Sherbrooke.....	2	2	2,268	575	7	0	..	5	1·77
Stormont.....	4	4	43,465	6,734	11	11	..	3	2·37
Tangier.....	2	2	32	6	5	0	..	3	21·75
Uniacke.....	1	1	141	310	0	0	2	3	23·32
Wagamatkeek.....	1	1	8	3	17	12	..	9	16·50
Whiteburn.....	1	1	76	42	6	0	..	11	3·16
Wine Harbour.....	2	2	3,163	861	5	0	..	5	10·69
Mortared.....	..	..	(50 lbs.)	4	11	5	182	8	8·00
Stibnite ore.....	1	..	782	1,031	13	11	1	6	9·25
Total.....	31	30	66,059	13,298	14	7	..	4	0·63

Quebec :—The small production of gold credited to this Province during the past four years is almost altogether represented by the gold contents of the pyritous ores mined near Sherbrooke in the Eastern townships. A small amount of prospecting is regularly done upon the alluvial deposits of the St. Francis, Chaudière and Gilbert rivers ; but very little output has been derived from this source for the past few years.

TABLE 7.
PRECIOUS METALS.
GOLD.—QUEBEC :—ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year.	Value.
1877.....	12,057	1892.....	\$12,987
1878.....	17,937	1893.....	15,696
1879.....	23,972	1894.....	29,196
1880.....	33,174	1895.....	1,281
1881.....	56,661	1896.....	3,000
1882.....	17,093	1897.....	900
1883.....	17,787	1898.....	6,089
1884.....	8,720	1899.....	4,916
1885.....	2,120	1900.....	Nil.
1886.....	3,981	1901.....	3,000
1887.....	1,604	1902.....	8,073
1888.....	3,740	1903.....	3,712
1889.....	1,207	1904.....	2,900
1890.....	1,350	1905.....	3,940
1891.....	1,800	1906.....	3,412

SESSIONAL PAPER No. 26b

Ontario :—" The gold mines of the Province were for the most part idle and unproductive during 1906. According to the returns made to the Bureau, some 3,926 ounces of bullion were obtained from the following properties : St. Anthony Reef, Laurentian, Sultana, Shakespeare, Olympia, Rush Bay, Golden Horn and Graig ; a small amount was also recovered from the Bessemer mattes made from the nickel-copper ores raised by the Canadian Copper Company. The total value of the gold production was \$66,193, a somewhat smaller yield than that for the year previous.

Gold was found in 1906 on the shores of Larder lake, which lies some distance north-east of Lake Timiskaming and near the Quebec boundary line, and the many prospectors who were attracted by reports of the discoveries staked out a large number of claims, mostly during the winter of 1906-07." (1).

A short visit was paid to the Larder Lake district by Mr. R. W. Brock in 1907 for the Ontario Bureau of Mines, and a preliminary report published in the Sixteenth Annual Report of the Bureau pages 202-218. There has as yet been no gold produced for this district.

TABLE 8.
PRECIOUS METALS.
GOLD.—ONTARIO :—ANNUAL PRODUCTION.

Calendar Year.	*Ounces. Fine.	Value.
1887	327	\$ 6,760
1888		
1889		
1890		
1891	97	2,000
1892	344	7,118
1893	708	14,637
1894	1,917	39,624
1895	3,015	62,320
1896	5,563	115,000
1897	9,158	189,294
1898	12,864	265,889
1899	20,395	421,591
1900	14,392	297,495
1901	11,845	244,837
1902	11,119	229,828
1903	9,097	188,036
1904	1,935	40,000
1905	4,403	91,000
1906	3,202	66,193

* Calculated from the value of \$20·67 per ounce.

(1) Sixteenth Annual Report of the Ontario Bureau of Mines, Part I, page 6.

7-8 EDWARD VII., A. 1908

Alberta:—About \$800 worth of gold, derived from the placer deposits of the Saskatchewan river, was purchased by the banks at Edmonton during 1906. This is the only record of production from that district during the year.

Statistics of the production of gold from the Saskatchewan river since 1887 are shown in the following table:—

TABLE 9.
PRECIOUS METALS.
GOLD.—ALBERTA:—ANNUAL PRODUCTION.

Calendar Year.	*Ounces. Fine.	Value.
		\$
1887.....	102	2,100
1888.....	58	1,200
1889.....	968	20,000
1890.....	194	4,000
1891.....	266	5,500
1892.....	508	10,506
1893.....	466	9,640
1894.....	725	15,000
1895.....	2,419	50,000
1896.....	2,661	55,000
1897.....	2,419	50,000
1898.....	1,209	25,000
1899.....	726	15,000
1900.....	242	5,000
1901.....	726	15,000
1902.....	484	10,000
1903.....	48	1,000
1904.....	24	500
1905.....	121	2,500
1906.....	39	800

* Calculated from the value at the rate of \$20.67 per ounce.

Yukon District or Klondike:—The production of the Yukon district in 1906 is estimated at about \$5,600,000, representing 270,924 fine ounces of gold. The production in 1905 was stated in a report for that year to have been \$6,327,200. This figure represented a preliminary estimate of the receipts of United States receiving offices of gold from the Canadian Yukon. It was discovered, however, that about 24,996 crude ounces of gold dust coming from the mines of Alaska were purchased in Dawson during 1905 and wrongly credited to the Canadian Yukon. Revised figures place the receipts of Canadian Yukon gold and silver in United States receiving offices during 1905 as:—

—	Standard Ounces.	Value.
Gold	423,438 463	\$7,875,955.41
Silver.....	99,588 74	56,765.58

SESSIONAL PAPER No. 26b

or a total output of the precious metals from the Canadian Yukon in 1905 of \$7,932,720. (1)

We are indebted to the Director of the United States Mint at Washington for a statement of the amount of gold and silver deposited at the United States receiving office in 1906, as follows:—

—	Fine ounces.	Value.
Gold.....	270,771·963	\$5,596,856
Silver	63,665·49	42,522
		\$ 45,639,378

The total value of the production of the precious metals in 1906, according to this authority, would be, therefore, \$5,639,378.

This statement is qualified, however, by the explanation that it may possibly include some gold from United States territory in Alaska, wrongly credited to the Canadian Yukon, or gold from Canadian sources other than the Yukon.

A royalty of $2\frac{1}{2}$ p.c. is collected by the Dominion Government on the gold output from the Yukon, and on the basis of this tax the following is a statement of the monthly production of gold during 1906, as furnished by the Interior Department:—

Production of gold in the Canadian Yukon Territory, based on the amount of royalty collected during the year ending Dec. 31.

1906.	Gross Weight. Ounces.
January.....	3,732·94
February.....	11,693·99
March.....	10·30
April.....	784·77
May.....	64,060·66
June.....	57,578·27
July.....	49,012·36
August.....	54,947·07
September.....	53,487·08
October.....	51,799·53
November.....	131·81
December.....	3,352·83
Total	350,591·61

(1) Report of the Director of the U.S. Mint for 1905, pages 44 and 45.

The crude gold is for the purpose of collecting the royalty valued at \$15 per ounce, which would place the value of the production at \$5,258,874. The grade (1) of gold found on the different creeks and along different positions of the same creek varies greatly. The lowest grade of gold found in the camp has a value of about \$12.50 per ounce, while assays of \$17.75 have been reported. It is exceedingly difficult to strike an average, but it is generally conceded that the average would exceed \$15 per ounce. At \$16 per ounce the value of the production in 1906 of 350,591.61 ounces would be \$5,609,465. At \$16.50 per ounce, which value experience has shown to be the average of Klondike gold received at United States mints and assay offices, the total value of the production would be \$5,784,761.

Owing to the fact thus evidenced that it is difficult to obtain exact information regarding the value of the output, the figures of production in the accompanying table are given in round numbers. The statistics, however, in the main, are primarily based on the receipts of gold from the Canadian Yukon in the receiving offices of the United States Mint.

TABLE 10.

PRECIOUS METALS.

GOLD.—YUKON DISTRICT :—ANNUAL PRODUCTION.

Calendar Year.	Ounces Fine.	Value.	Calendar Year.	Ounces Fine.	Value.
		\$			\$
1885			1897	120,948	2,500,000
1886	4,838	100,000	1898	483,793	10,000,000
1887	3,387	70,000	1899	774,069	16,000,000
1888	1,935	40,000	1900	1,077,640	22,275,000
1889	8,466	175,000	1901	870,827	18,000,000
1890	8,466	175,000	1902	701,500	14,500,000
1891	1,935	40,000	1903	592,646	12,250,000
1892	4,233	87,500	1904	507,983	10,500,000
1893	8,515	176,000	1905	381,035	7,876,000
1894	6,047	125,000	1906	270,924	5,600,000
1895	12,095	850,000			
1896	14,514	300,000	Total 1885 to 1906		121,039,500

The following statement of gold production of the Yukon, royalty paid, etc., is taken from the report of the Mines Branch of the Department of the Interior.

(1) Report of the gold values in the Klondike High Level Gravels—R. G. McConnell, Geological Survey, p. 12.

Fiscal Year.	Total Gold Production.	Total Exemption.	Royalty Collected on.	Royalty Paid.
	\$	\$	\$	\$
1898.....	3,072,773	339,845	2,732,928	273,292
1899.....	7,582,283	1,699,657	5,882,626	588,262
1900.....	9,809,464	2,501,744	7,307,720	730,771
1901.....	9,162,082	1,927,666	7,236,522	592,660
1902.....	9,566,340	1,199,114	8,367,225	331,436
1903.....	12,113,015	.....	12,113,015	302,893
1904.....	10,790,663	.....	10,790,663	272,217
1905.....	8,222,054	.....	8,222,054	206,760
1906.....	6,540,007	.....	6,540,007	163,963

British Columbia :—The value of the output of gold in British Columbia in 1906 was \$5,579,039, as compared with \$5,902,402 in 1905, a decrease of \$323,363 or 5·47 per cent. Of the output in 1906 \$948,400 was derived from placer workings, dredging, hydraulicizing, etc., and \$4,630,639 from lode mines.

The Provincial Mineralogist in his report to the Minister of Mines for the Province gives the special features of the gold production during the year as follows :—

“Placer Gold—The production of placer gold during the year 1906 was about \$948,400, which is about 2·2 per cent less than that of 1905. This falling off, though slight, is general, and represents the lessened work of the individual miner, whose successors, the large companies, have not as yet got into satisfactory operation.

The Atlin district produced very nearly as much gold as it did the previous year, chiefly the work of comparatively small companies, although in this district individual miners are still at work ; but the ground suited for this class of mining is gradually diminishing.

The two large dredges installed in this district have been practically abandoned, as the ground upon which they were working was found unsuitable for dredging operations.

A large steam shovel plant has been installed on shallow ground, and from present indications promises to be a large producer. The small shovel, the first installed in the district, has not been a commercial success, owing to the quite inadequate arrangements for handling and washing the dirt lifted.

In the Dease Lake section of Cassiar, despite the difficulties of transportation, one hydraulic company recovered between \$20,000 and \$25,000 in gold, and a second company will probably be in operation in 1907. Here, however, the individual miner has almost disappeared.

In the Cariboo district, the Cariboo mining division shows a marked increase over the preceding year, about 18.9 per cent, chiefly from small hydraulic enterprises; but the Quesnel division shows a decrease of about 30 per cent, due to the fact that the largest producing company did little mining, being taken up with large operations for increasing its water supply.

The Fort Steele district continues to produce a little gold from the old creeks, but the quantity is yearly diminishing.

The bars on the Thompson and Fraser rivers have been very disappointing, and the dredges installed thereon have not been successful.

Gold from Lode Mining—The value of the gold produced from lode mining in the Province in 1906 was \$4,630,639, of which about 95 per cent was recovered from the smelting of copper-bearing ores. There are practically no stamps in operation since the Ymir mine ceased to operate, excepting one at Hedley."

TABLE 11.

PRECIOUS METALS.

GOLD.—BRITISH COLUMBIA:—ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year.	Value.
1858.....	\$ 705,000	1883.....	\$ 794,252
1859.....	1,615,072	1884.....	736,165
1860.....	2,228,543	1885.....	713,738
1861.....	2,666,118	1886.....	903,651
1862.....	2,656,903	1887.....	693,709
1863.....	3,913,563	1888.....	616,731
1864.....	3,735,850	1889.....	588,923
1865.....	3,491,205	1890.....	494,436
1866.....	2,662,106	1891.....	429,811
1867.....	2,480,868	1892.....	399,525
1868.....	2,372,972	1893.....	379,535
1869.....	1,774,978	1894.....	530,530
1870.....	1,336,956	1895.....	1,266,954
1871.....	1,799,440	1896.....	1,788,206
1872.....	1,610,972	1897.....	2,724,657
1873.....	1,305,749	1898.....	2,939,852
1874.....	1,844,618	1899.....	4,202,473
1875.....	2,474,904	1900.....	4,732,105
1876.....	1,786,648	1901.....	5,318,703
1877.....	1,608,182	1902.....	5,961,409
1878.....	1,275,204	1903.....	5,873,036
1879.....	1,290,058	1904.....	5,704,908
1880.....	1,013,827	1905.....	5,902,402
1881.....	1,046,737	1906.....	5,579,039
1882.....	954,085		

TABLE 12.

PRECIOUS METALS.

GOLD.—BRITISH COLUMBIA :—PRODUCTION BY DISTRICTS—1906.

Districts.	Gold, Placer.		Gold, Lode.	
	Ounces.	Value.	Ounces.	Value.
Cariboo—		\$		\$
Cariboo division.....	17,790	355,800		
Quesnel ".....	1,980	39,600		
Omineca ".....	500	10,000		
Cassiar—				
Atlin Lake division.....	22,750	455,000		
All other divisions.....	2,200	44,000	2	41
East Kootenay—				
Fort Steele division....	520	10,400		
Other divisions.....			10	207
West Kootenay—				
Ainsworth division.....			19	393
Nelson ".....	50	1,000	11,677	241,364
Slocan and Slocan City.....			69	1,426
Trail Creek.....			105,356	2,177,709
All other divisions.....	200	4,000	2,048	42,332
Lillooet.....	840	16,800	170	3,514
Yale—				
Grand Forks, etc.....	165	3,300	94,125	1,945,564
Similkameen, etc.....	125	2,500	6	124
Yale, etc.....	250	5,000	215	4,444
Coast and other divisions...	50	1,000	10,330	213,521
Totals.....	47,420	948,400	224,027	4,630,639

The following tables show the production of the Rossland mines, and illustrate the average results attained during the past thirteen years.

NET PRODUCTION PER SMELTER RETURNS.

Year.	Ore, tons, 2,000 lb.	Gold, ozs.	Silver, ozs.	Copper, lb.	Value.
1894.....	1,856	3,723	5,357	106,229	\$ 75,510
1895.....	19,693	31,497	46,702	840,420	702,459
1896.....	38,075	55,275	89,285	1,580,635	1,243,360
1897.....	68,804	97,024	110,068	1,819,586	2,097,280
1898.....	111,282	87,343	170,804	5,232,011	2,470,811
1899.....	172,665	102,976	185,818	5,693,889	3,229,086
1900.....	217,636	111,625	167,378	2,071,865	2,739,300
1901.....	283,360	132,333	970,460	8,333,446	4,621,299
1902.....	329,534	162,146	373,101	11,667,807	4,893,395
1903.....	360,786	145,353	209,537	8,652,127	4,255,958
1904.....	312,991	133,095	181,830	7,119,876	3,760,866
1905.....	330,618	129,843	147,753	5,800,294	3,672,828
1906.....	279,527	105,356	126,174	4,750,110	3,173,587

AVERAGE NET SMELTER RETURNS, OR ACTUAL YIELD PER TON.

Year.	Gold.	Silver.	Copper.	Value.
	Ounces.	Ounces.	Per cent.	\$ cts.
1894.....	2'00	2'89	2'85	40.69
1895.....	1'60	2'41	2'10	35.67
1896.....	1'45	2'34	2'08	32.65
1897.....	1'42	1'60	1'32	30.48
1898.....	.78	1'54	2'35	22.10
1899.....	.596	1'07	1'65	18.70
1900.....	.513	.769	.476	12.58
1901.....	.467	3'424	1'470	16.31
1902.....	.492	1'132	1'770	14.85
1903.....	.403	.581	1'199	11.80
1904.....	.425	.581	1'137	12.01
1905.....	.393	.447	.877	11.11
1906.....	.377	.451	.850	11.35

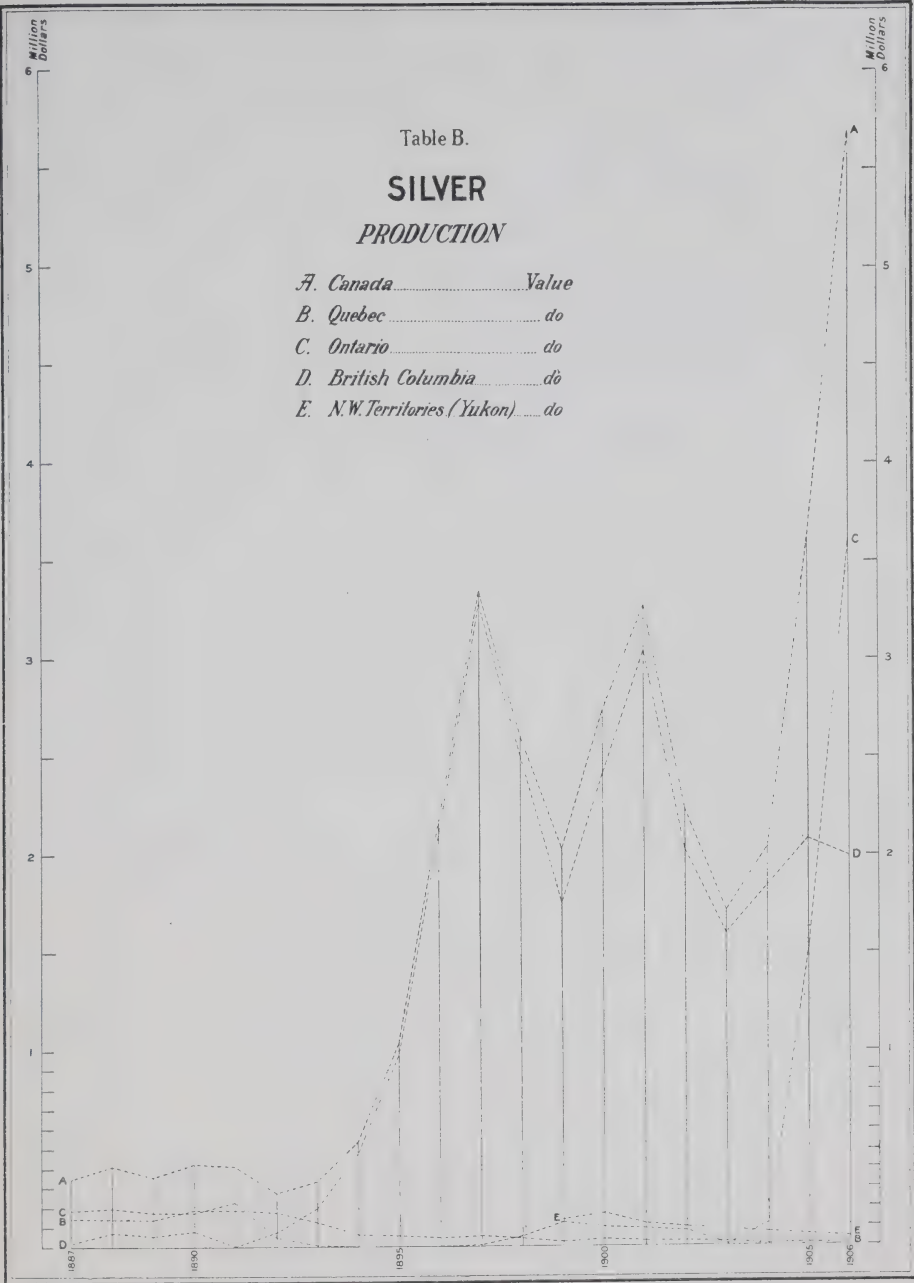
SILVER.

The production and shipment of the remarkably rich silver ores from the Cobalt district has resulted in a large increase in Canada's silver production. The total shipments in 1906 were about 8,473,379 ounces, contained in ore, matte, or other form, which, valued at 66·791 cents per ounce, the average price of silver for the year in the New York market, represented a total ultimate value of \$5,659,455. Compared with 1905 this is an increase in quantity of 2,483,712 ounces or 41·466 per cent. The average price of silver during the year was greater than in 1905, by 6·439 cents or 10·6 per cent.

The price of silver varied considerably during the year, the lowest average monthly price according to quotations published by the Engineering and Mining Journal, of New York, being 64·597 cents per ounce in March, and the highest 70·813 cents in November. The average monthly prices were as follows:—

AVERAGE MONTHLY PRICE OF SILVER DURING 1906.

Month.	Price.	Month.	Price.
	Cents.		Cents.
January.....	65'288	July.....	65'105
February.....	66'108	August.....	65'949
March.....	64'597	September.....	67'927
April.....	64'765	October.....	69'523
May.....	66'976	November.....	70'813
June.....	65'394	December.....	69'050
Average for the Year.....		66'791	



SESSIONAL PAPER No. 26b

Of the total production in 1906 about 63·7 per cent was derived from the Cobalt district of Ontario; 33·5 per cent from the various silver ores of British Columbia; the balance representing the silver contained in the pyrites ores of Quebec, and the silver carried by the placer gold obtained from the Yukon.

Quebec:—The output from the Province of Quebec, as usual, is represented by the small amount contained in the pyrites ore mined in the vicinity of Capelton in the Eastern townships.

Ontario:—Although spasmodic attempts have been made in recent years to work the silver ores of the Silver Mountain district near Port Arthur, the main silver production of this Province is now obtained from the Cobalt District ores. From a beginning in 1904 of shipments aggregating somewhat over 150 tons, carrying 206,875 ounces of silver the production had increased in 1906 to shipments of 5,335 tons carrying 5,401,766 ounces of silver, and in addition the ores carry important values in cobalt and arsenic, although the mine owners have received payment for but a small proportion of the latter.

Ontario thus once more takes first place as a silver producer, formerly held at the time of the operation of the Silver Islet mines on Lake Superior. Since 1894, the argentiferous lead ores of British Columbia have been responsible for the greater part of the silver output in Canada, contributing over ninety per cent of the total until 1904. In 1905, however, British Columbia's proportion was reduced to 57 per cent, and Ontario's increased to 41 per cent.

Statistics of the production of silver are shown in table 13, while the details by provinces are given in table 14.

TABLE 13.
PRECIOUS METALS.
SILVER.—ANNUAL PRODUCTION.

Year.	Ounces.	Value.	Average price per ounce.	Year.	Ounces.	Value.	Average price per ounce.
		\$	cts.			\$	cts.
1887....	355,083	347,271	98·0	1897....	5,558,446	3,323,395	59·79
1888....	437,232	410,998	94·0	1898....	4,452,333	2,593,929	58·26
1889....	383,318	358,785	93·6	1899....	3,411,644	2,032,658	59·58
1890....	400,687	419,118	104·6	1900....	4,468,225	2,740,362	61·33
1891....	414,523	409,549	98·0	1901....	5,539,192	3,265,354	58·95
1892....	310,651	272,130	86·0	1902....	4,291,317	2,238,351	52·16
1893....	.....	330,128	77·0	1903....	3,198,581	1,709,642	53·45
1894....	847,697	534,049	63·0	1904....	3,577,526	2,047,095	57·22
1895....	1,578,275	1,030,299	65·28	1905....	5,989,667	3,614,883	60·35
1896....	3,205,343	2,149,503	67·06	1906....	8,473,379	5,659,455	66·79

TABLE 14.
PRECIOUS METALS.
SILVER.—PRODUCTION BY PROVINCES.

Calendar Year.	ONTARIO.		QUEBEC.		BRITISH COLUMBIA.		YUKON TERRITORY.	
	Ounces.	Value.	Ounces.	Value.	Ounces.	Value.	Ounces.	Value.
		\$		\$		\$		\$
1887..	190,495	186,304	146,898	143,666	17,690	17,301		
1888..	208,064	195,580	149,388	140,425	79,780	74,993		
1889..	181,609	169,986	148,517	139,012	53,192	49,787		
1890..	158,715	166,016	171,545	179,436	70,427	73,666		
1891..	225,633	222,926	185,584	183,357	3,306	3,266		
1892..	41,581	36,425	191,910	168,113	77,160	67,592		
1893..		8,689		126,439		195,000		
1894..			101,318	63,830	746,379	470,219		
1895..			81,753	53,369	1,496,522	976,930		
1896..			70,000	46,942	3,135,343	2,102,561		
1897..	5,000	2,990	80,475	48,116	5,472,971	3,272,289		
1898..	85,000	49,521	74,932	43,655	4,292,401	2,500,753		
1899..	202,000	120,352	40,231	23,970	2,939,413	1,751,302	230,000	137,034
1900..	161,650	99,140	58,400	35,817	3,958,175	2,427,548	290,000	177,857
1901..	151,400	89,250	41,459	24,440	5,151,333	3,036,711	195,000	114,953
1902..	145,000	75,632	42,500	22,168	3,917,917	2,043,586	185,900	96,965
1903..	17,777	9,502	28,600	15,287	2,996,204	1,601,471	156,000	83,382
1904..	206,875	118,376	15,000	8,533	3,222,481	1,843,935	133,170	76,201
1905..	2,441,000	1,473,192	19,620	11,841	3,439,417	2,075,757	89,630	54,093
1906..	5,401,766	3,607,894	17,686	11,813	2,990,262	1,997,226	63,665	42,522

British Columbia :—The production by districts in British Columbia is shown in the following table :—

TABLE 15.
PRECIOUS METALS.
SILVER.—BRITISH COLUMBIA :—PRODUCTION BY DISTRICTS.

District.	1903.	1904.	1905.	1906.
	Ounces.	Ounces.	Ounces.	Ounces.
Cassiar.....	53	185	477	26
Kootenay East—				
Fort Steele division.....	28,537	590,186	1,137,872	1,049,536
Other divisions.....	59,006	20,964	16,880	22,174
Kootenay West—				
Ainsworth division.....	108,678	90,004	99,781	165,915
Nelson ".....	190,003	198,795	116,729	211,122
Slocan ".....	1,466,931	1,540,170	1,045,948	571,613
Trail Creek ".....	209,537	181,830	147,753	126,174
Other divisions.....	392,354	148,201	121,551	79,262
Lillooet.....	12			
Yale—				
Osoyoos division.....	320,749	245,155	630,407	671,661
Yale ".....	15	625	3,863	1,034
Coast and other districts..	220,329	206,366	118,156	91,745
Totals.....	2,996,204	3,222,481	3,439,417	2,990,262

SESSIONAL PAPER No. 26b

Compared with 1905 a decrease of 449,155 ounces or 13 per cent is shown. About 77 per cent of the silver is found in association with lead in argentiferous galena, the remainder being found in conjunction with copper ores.

Yukon.—The figures of silver production in the Yukon given in table 14 represent the silver found alloyed with the placer gold obtained from that district, there having been as yet no record of production of silver ores from the Windy Arm deposits.

EXPORTS.—The following table shows the value of the silver in ore matte or other form exported from Canada since 1886.

TABLE 16.
PRECIOUS METALS.
SILVER.—EXPORTS OF ORE.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$ 25,957	1897.....	\$ 3,576,391
1887.....	206,284	1898.....	2,902,277
1888.....	219,008	1899.....	1,623,905
1889.....	212,163	1900.....	2,341,872
1890.....	204,142	1901.....	2,026,727
1891.....	225,312	1902.....	1,820,058
1892.....	56,688	1903.....	1,989,474
1893.....	213,695	1904.....	1,904,394
1894.....	359,731	1905.....	2,777,218
1895.....	994,354	1906.....	5,686,444
1896.....	2,271,959		

COPPER.

The total production of copper in Canada in 1906 was 55,609,888 pounds, or by provinces as follows :—

Quebec.....	1,981,169	pounds.
Ontario.....	10,638,231	"
British Columbia.....	42,990,488	"
Total.....	55,609,888	"

This output shows a substantial increase of 15·6 per cent over the production in 1905, the increase being general throughout most of the copper producing districts.

Many of the ores from which copper is obtained in Canada contain considerable values in other constituents, in fact in many cases the copper may be considered as of secondary importance.

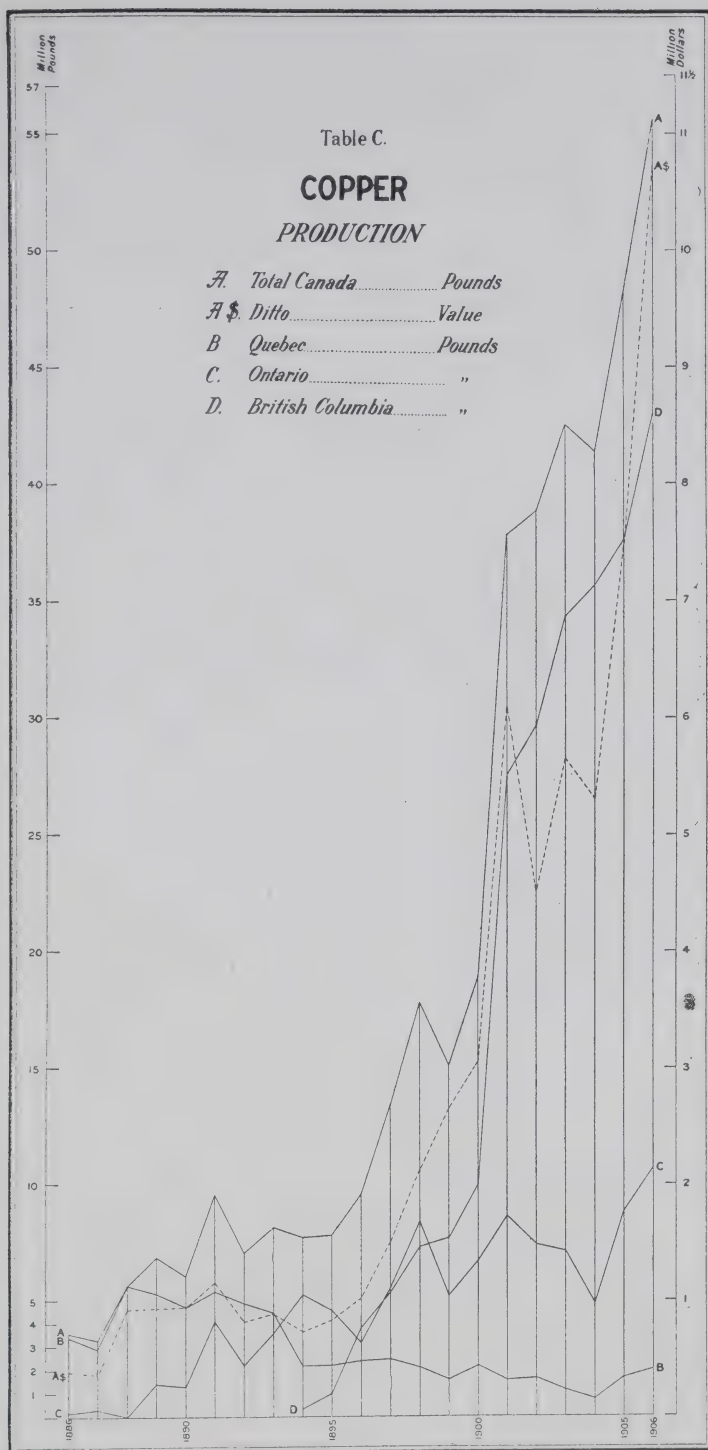
In Quebec the copper is derived from the pyrite deposits near Sherbrooke, which are primarily mined for the manufacture of sulphuric acid; but which contain also, in addition to the copper, slight values in gold and silver. The production in Ontario is still practically represented by the copper contents of the nickel-copper ores of the Sudbury district, which contain also values in gold, silver, cobalt, and the platinum group of metals, although a small production is now obtained from a class of ores yielding copper only.

In British Columbia much the greater part of the output is now derived from the low grade sulphide ores of the Boundary district, the values of which in gold and silver would enable them to be worked at a profit, it is believed, even should the price of copper fall much below its present high level.

*Prices :—*The total value of the production in 1906, at the final average monthly price of the metal in New York according to the quotation published in the Engineering and Mining Journal, was \$10,720,474, as compared with a total value in 1905 of \$7,497,660, an increase of over 43 per cent. The average monthly price of the metal in 1906 was 19·278 cents per pound, compared with an average of 15·590 cents during the previous year, or an increase of over 23 per cent.

The average monthly prices of copper in New York were as follows :—

	Cents per lb.
January.....	18·310
February.....	17·869
March.....	18·361
April.....	18·375
May.....	18·475
June.....	18·442
July.....	18·190
August.....	18·380
September.....	19·033
October.....	21·203
November.....	21·833
December.....	22·885
Average for the year.....	19·278



Statistics of production, exports, and imports are given in the following tables :—

TABLE 1.
COPPER.
ANNUAL PRODUCTION.*

Calendar Year.	Lb.	Increase or Decrease.		Value.	Increase or Decrease.		Average Price per Pound.
		Lbs.	%		\$	%	
1886.....	3,505,000			\$ 385,550			Cts. 11·00
1887.....	3,260,424	244,576	6·99	366,798	18,752	4·86	11·25
1888.....	5,562,864	2,302,440	70·60	927,107	560,309	152·70	16·66
1889.....	6,809,752	1,246,888	22·40	936,341	9,234	0·99	13·75
1890.....	6,013,671	796,081	11·69	947,153	10,812	1·15	15·75
1891.....	9,529,401	3,515,730	58·46	1,226,703	279,550	29·51	12·87
1892.....	7,087,275	2,442,126	25·63	818,580	408,123	53·27	11·55
1893.....	8,109,856	1,022,381	14·40	871,809	53,229	6·50	10·75
1894.....	7,708,789	401,067	4·94	736,960	134,849	15·46	9·56
1895.....	7,771,639	62,850	·81	836,228	99,268	13·47	10·76
1896.....	9,393,012	1,621,373	20·86	1,021,960	185,732	22·21	10·88
1897.....	13,300,802	3,907,790	41·60	1,501,660	479,700	46·94	11·29
1898.....	17,747,136	4,446,334	33·43	2,134,980	633,320	42·17	12·03
1899.....	15,078,475	2,668,661	15·04	2,655,319	520,339	24·37	17·61
1900.....	18,937,138	3,858,663	25·59	3,065,922	410,603	15·46	16·19
1901.....	37,827,019	18,889,881	99·75	6,096,581	3,030,659	98·84	16·117
1902.....	38,804,259	977,240	2·58	4,511,383	1,585,198	26·00	11·626
1903.....	42,684,454	3,880,195	10·00	5,649,487	1,138,104	25·23	13·235
1904.....	41,383,722	1,300,732	3·05	5,306,635	342,852	6·07	12·823
1905.....	48,092,753	6,709,031	16·21	7,497,660	2,191,025	41·29	15·590
1906.....	55,609,888	7,517,135	15·63	10,720,474	3,222,814	42·98	19·278

* The production is altogether represented by the copper contained in ore, matte, etc., produced and shipped, valued at the average market price for the year for fine copper in New York.

NOTE.—In the above table, increases are shown underlined, and decreases in the ordinary way.

TABLE 2.

COPPER.

EXPORTS OF COPPER IN ORE, MATTE, ETC.

Calendar Year.	Pounds.	Value.
		\$
1885.....		262,600
1886.....		249,259
1887.....		137,966
1888.....		257,260
1889.....		168,457
1890.....		398,497
1891.....		348,104
1892.....		277,632
1893.....	4,792,201	269,160
1894.....	1,625,389	91,917
1895.....	3,742,352	236,965
1896.....	5,462,052	281,070
1897.....	14,022,610	850,336
1898.....	11,572,381	840,243
1899.....	11,371,766	1,199,908
1900.....	23,631,523	1,741,885
1901.....	32,488,872	3,404,908
1902.....	26,094,498	2,476,516
1903.....	38,364,676	3,873,827
1904.....	38,553,282	4,216,214
1905.....	40,740,861	5,443,873
1906.....	42,398,538	7,303,866

TABLE 3.

COPPER.

IMPORTS OF PIGS, OLD, SCRAP, ETC.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	31,900	2,130	1893.....	168,300	16,331
1881.....	9,800	1,157	1894.....	101,200	7,397
1882.....	20,200	1,984	1895.....	72,062	6,770
1883.....	124,500	20,273	1896.....	86,905	9,226
1884.....	40,200	3,180	1897.....	49,000	5,449
1885.....	28,600	2,016	1898.....	1,050,000	80,000
1886.....	82,000	6,969	1899.....	1,655,000	246,740
1887.....	40,100	2,507	1900.....	1,144,000	180,990
1888.....	32,300	2,322	1901.....	951,500	152,274
1889.....	32,300	3,288	1902.....	1,767,200	225,832
1890.....	112,200	11,521	1903.....	2,038,400	252,594
1891.....	107,800	10,452	1904.....	2,115,300	270,315
1892.....	343,600	14,894	1905.....	1,944,400	266,548
1906 { Copper, old and scrap or in blocks..... Duty free.				445,200	63,765
{ Copper in pigs or ingots..... " "				2,182,500	378,089
Total, 1906.....				2,627,700	441,854

TABLE 4.

COPPER.

IMPORTS OF MANUFACTURES.

Fiscal Year.		Value.	
		\$	
1880.....		123,061	
1881.....		159,163	
1882.....		220,235	
1883.....		247,141	
1884.....		134,534	
1885.....		181,469	
1886.....		219,420	
1887.....		325,365	
1888.....		303,459	
1889.....		402,216	
1890.....		472,668	
1891.....		563,522	
1892.....		422,870	
1893.....		458,715	
1894.....		175,404	
1895.....		251,615	
1896.....		285,220	
1897.....		264,587	
1898.....		786,529	
1899.....		551,586	
1900.....		1,090,280	
1901.....		951,045	
1902.....		1,281,522	
1903.....		1,291,635	
1904.....		1,191,610	
1905.....		1,775,881	

	Duty.	Pounds.	\$
1906. { Copper in bolts, bars and rods, in coils, or otherwise in lengths not less than 6 feet, unmanufactured.....	Free.	11,227,600	1,922,071
Copper, in strips, sheets or plates, not planished or coated, etc.....	"	2,547,200	519,808
Copper tubing in lengths not less than 6 feet, and not polished, bent or otherwise manufactured.....	"	262,761	69,319
Copper rollers, for use in calico printing, imported by calico printers for use in their own factories.....	"	.....	6,697
Copper and manufactures of :—			
Nails, tacks, rivets and burrs or washers..	30 p. c.	.....	3,460
Wire, plain, tinned or plated.....	15 "	216,517	40,095
Wire cloth, etc.....	25 "	.....	3,303
All other manufactures of, N.O.P.....	30 "	.....	95,550
Total			2,660,303

Quebec :—As usual the copper production in Quebec was derived chiefly from pyrites ores of the Eastern townships, which are mined primarily for the manufacture of sulphuric acid.

Statistics showing the copper contained in the ore shipped are given in table 5 following :—

TABLE 5.

COPPER.

QUEBEC :—PRODUCTION.

Calendar Year.	Pounds.	Value.
		\$
1886.....	3,340,000	367,400
1887.. ..	2,937,900	330,514
1888.....	5,562,864	927,107
1889.	5,315,000	730,813
1890.....	4,710,606	741,920
1891... ..	5,401,704	695,469
1892.....	4,883,480	564,042
1893.....	4,468,352	480,348
1894.....	2,176,430	208,067
1895.....	2,242,462	241,288
1896.....	2,407,200	261,903
1897.....	2,474,970	279,424
1898.....	2,100,235	252,658
1899.....	1,632,560	287,494
1900.....	2,220,000	359,418
1901.....	1,527,442	246,178
1902.....	1,640,000	190,666
1903.....	1,152,000	152,467
1904.....	760,000	97,455
1905.....	1,621,243	252,752
1906.....	1,981,169	381,930

Ontario :—While the greater part of the copper production of this Province is derived from the nickel-copper ores of the Sudbury district, there was considerable activity during the year in the development of copper properties ; but, although some 18,000 tons of ore were mined from these, only a small quantity was shipped.

The total quantity of nickel-copper ore mined during the year was 343,814 tons ; while 340,059 tons were smelted, producing 20,346 tons

SESSIONAL PAPER No. 26b

of Bessemer matte. The quantity of matte shipped during the year was 20,310 tons, containing 5,264 tons of copper and 10,745 tons of nickel, the value of the matte being about \$4,628,011.

The companies producing these ores were :—

The Canadian Copper Co., Copper Cliff, Ont.

The Mond Nickel Co., Victoria Mines, Ont.

Amongst the other copper properties a 50 ton smelter was operated by the Medina Copper Company at Eldorado.

TABLE 6.

COPPER.

ONTARIO :—PRODUCTION.

Calendar Year.	Pounds.	Value.
		\$
1886.....	165,000	18,150
1887.....	322,524	36,284
1888.....	Nil.	Nil.
1889.....	1,466,752	201,678
1890.....	1,303,065	205,233
1891.....	4,127,697	531,234
1892.....	2,203,795	254,538
1893.....	3,641,504	391,461
1894.....	5,207,679	497,854
1895.....	4,576,337	492,414
1896.....	3,167,256	344,598
1897.....	5,500,652	621,023
1898.....	8,375,223	1,007,539
1899.....	5,723,324	1,007,877
1900.....	6,740,058	1,091,215
1901.....	8,695,831	1,401,507
1902.....	7,408,202	861,278
1903.....	7,172,533	949,285
1904.....	4,913,594	630,070
1905.....	8,779,259	1,368,686
1906.....	10,638,231	2,050,838

British Columbia ;—The copper production in this Province continues to increase, it being now in point of value the most important mineral product in the Province. The production in 1906, 42,990,488 pounds, shows an increase of 5,298,237 pounds or 14 per cent over the production in 1905. At the final price of copper in New York the value of the production in 1906 was \$8,287,706.

The mines of the Boundary district produced about 75 per cent of the total ; the mines of the Coast district about 12 per cent, and the Rossland mines 11 per cent.

TABLE 7.

COPPER.

BRITISH COLUMBIA—PRODUCTION.

Calendar Year.	Copper contained in ores, matte, etc.	Increase.		Value.
	Lbs.	Lbs.	%	
1894	324,680			\$ 31,039
1895	952,840	628,160	193	102,526
1896	3,818,556	2,865,716	301	415,459
1897	5,325,180	1,506,624	39	601,213
1898	7,271,678	1,946,498	36	874,783
1899	7,722,591	450,913	6	1,359,948
1900	9,977,080	2,254,489	29	1,615,289
1901	27,603,746	17,626,666	177	4,448,896
1902	29,636,057	2,032,311	7	3,445,488
1903	34,359,921	4,723,864	16	4,547,735
1904	35,710,128	1,350,207	3.7	4,579,110
1905	37,692,251	1,982,123	5.6	5,876,222
1906	42,990,488	5,298,237	14.1	8,287,706

TABLE 8.

BRITISH COLUMBIA—PRODUCTION BY DISTRICTS.

—	1903.	1904.	1905.	1906.
	Pounds.	Pounds.	Pounds.	Pounds.
Cassiar	2,249	8,900		293,269
East Kootenay	2,730	5,472	10,606	6,910
West Kootenay—				
Nelson	346,218	220,500	92,663	216,034
Slocan	181			2,861
Trail Creek	8,652,127	7,119,876	5,800,294	4,750,110
All other	3,294			1,145
Yale—				
Boundary	18,485,542	22,066,407	27,670,644	32,226,782
Ashcroft, Kamloops	6,409	328,380	680,808	355,377
Coast districts	6,861,171	5,960,593	3,437,236	5,138,000
	34,359,921	35,710,128	37,692,251	42,990,488

Yukon District :—A considerable amount of exploratory work was done on copper properties at Whitehorse, Yukon district, during the year, and about 100 tons shipped from one of the claims. A short description of some of the mining claims in this district will be found in the Summary Report of the Geological Survey for 1906, pages 24 and 25.

IRON.

Iron Ore:—The total production (shipments) of iron ore in Canada in 1906 was 248,831 tons, valued at the mines at \$522,242. By provinces the production was as follows:—

	Short tons.	Value.
Nova Scotia.....	97,820	\$151,386
Quebec.....	9,933	32,938
Ontario.....	141,078	337,918
Total.....	248,831	\$522,242

The production in Nova Scotia includes nearly 50,000 tons of ankerite ore, carrying a low iron content, which is used as a flux; the balance was derived from the mines at Torbrook, Brookfield, and Londonderry. The total output was utilized by the Londonderry Iron and Mining Company at their blast furnace at Londonderry.

In Quebec the bog iron of Champlain, Joliette, Drummond, Nicolet, St. Maurice, and Vaudreuil counties, was as usual mined and used in the furnaces at Radnor Forges and Drummondville.

In Ontario about 5,000 tons of ore were shipped from the Radnor mine in Renfrew county, owned by the Canada Iron Furnace Co., and the Mineral Range Iron Co.'s mine in Hastings county, the balance of the shipments being from the Helen mine at Michipicoten, owned by the Lake Superior Power Co. The actual amount of ore mined was probably somewhat less than the above figures, as a portion of the shipments from the Helen mine was from stocked ore. The quantity of ore raised, according to the Ontario Bureau of Mines Report, was 128,049 tons. The shipments from the Radnor mine were made to the furnaces at Radnor Forges, Quebec; while of the shipments from Michipicoten about 55 per cent went to Sault Ste Marie and Hamilton, Ont., and the balance to Buffalo, Cleveland and Detroit.

TABLE 1.

IRON.

PRODUCTION OF ORE BY PROVINCES.

Calendar Year.	Nova Scotia.	Quebec.	Ontario.	British Columbia.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.
1886.....	44,388	.....	16,032	3,941	64,361
1887.....	43,532	13,401	16,598	2,796	76,330
1888.....	42,611	10,710	16,894	8,372	78,587
1889.....	54,161	14,533	.....	15,487	84,181
1890.....	49,206	22,305	.....	.....	76,511
1891.....	53,649	14,380	.....	950	68,979
1892.....	78,258	22,690	.....	2,300	103,248
1893.....	102,201	22,076	.....	1,325	125,602
1894.....	89,379	19,492	.....	1,120	109,991
1895.....	83,792	17,783	.....	1,222	102,797
1896.....	58,810	17,630	15,270	196	91,906
1897.....	23,400	22,436	2,770	2,099	50,705
1898.....	19,079	17,873	21,111	280	58,343
1899.....	28,000	19,420	25,126	2,071	74,617
1900.....	18,940	19,000	82,950	1,110	122,000
1901.....	18,619	15,489	272,538	7,000	313,646
1902.....	16,172	18,524	359,288	10,019	404,003
1903.....	40,335	12,035	209,634	2,290	264,294
1904.....	61,293	16,152	141,601	.....	219,046
1905.....	84,952	12,681	193,464	.....	291,097
1906.....	97,820	9,933	141,078	.....	248,831

TABLE 2.

IRON.

NOVA SCOTIA :—ANNUAL PRODUCTION OF ORE.
(Previous to 1886).

Calendar Year.	Tons.	Calendar Year.	Tons.
1876.....	15,274	1881.....	39,843
1877.....	16,879	1882.....	42,135
1878.....	36,600	1883.....	52,410
1879.....	29,889	1884.....	54,885
1880.....	51,193	1885.....	48,129

The exports of iron ore from Canada, as compiled from Customs reports, are shown in tables 3 and 4 for the calendar and fiscal years respectively. Nearly all the iron ore exported goes to the United States. Table 4a, which has therefore been added to show the quantity of iron ores imported into the United States from Canada, has been compiled from "The Foreign Commerce and Navigation of the United States" published at Washington.

A comparison of tables 4 and 4a, shows large discrepancies for the years 1901 to 1905, inclusive. The Canadian figures of exports for

Table D

IRON ORE

- A. Production of Canadian Ore.....Tons
- B. Consumption of Canadian Ore }
in Canadian Furnaces } "
- C. Consumption of Foreign Ore }
in Canadian Furnaces } "

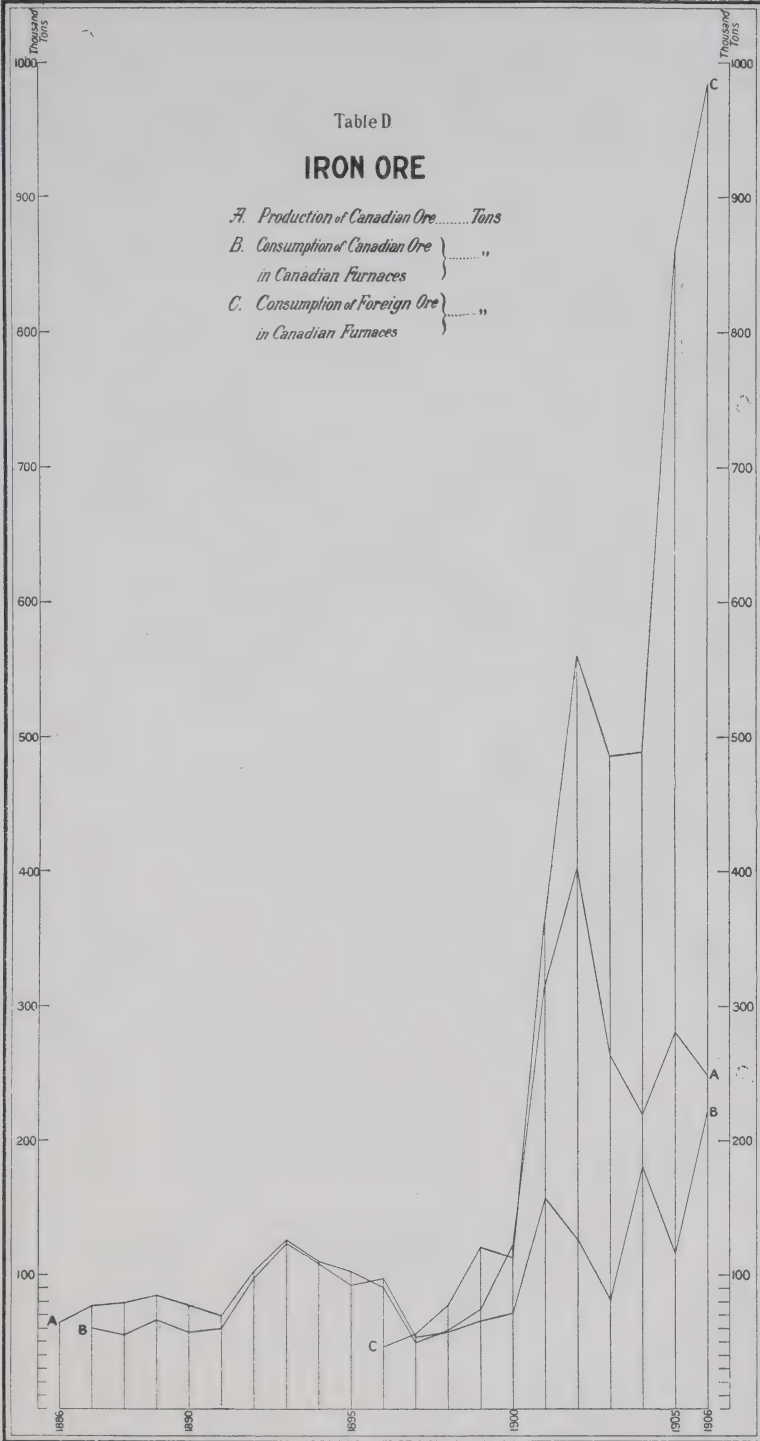
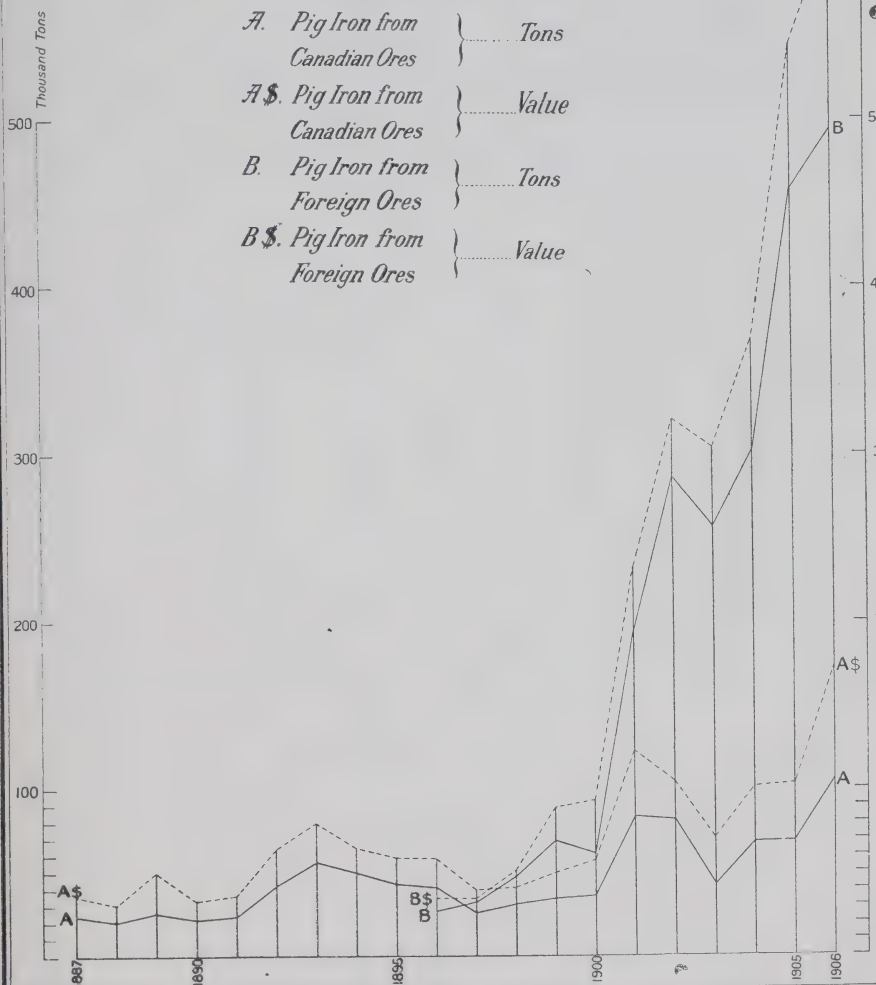


Table D.D.

PIG IRON *PRODUCTION*



SESSIONAL PAPER No. 26b

these years are evidently much too high, and an investigation has shown that an error had crept into the Customs returns, owing to a duplication of certain entries.

TABLE 3.
IRON.
EXPORTS OF IRON ORE.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1893.....	2,419	7,590	1900.....	5,527	13,511
1894.....		21,294	1901*.....	306,199	762,283
1895.....	1,571	3,909	1902*.....	428,901	1,065,019
1896.....	1,033	1,911	1903*.....	368,233	922,571
1897.....	403	811	1904*.....	168,828	401,738
1898.....	182	278	1905*.....	168,289	407,881
1899.....	4,145	9,538	1906.....	74,778	149,177

* The export figures for the four years indicated are incorrect owing to a duplication of entries.

TABLE 4.
IRON.
EXPORTS OF IRON ORE.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1879.....	3,562	7,530	1893.....	7,811	26,114
1880.....	30,524	76,474	1894.....	1,859	9,026
1881.....	44,677	114,850	1895.....	2,315	5,743
1882.....	43,835	135,463	1896.....	14	35
1883.....	44,914	138,775	1897.....	1,320	2,492
1884.....	25,308	66,549	1898.....	260	402
1885.....	54,367	132,074	1899.....	1,849	4,968
1886.....	7,542	23,039	1900.....	4,327	7,689
1887.....	23,345	71,934	1901*.....	58,401	150,657
1888.....	13,544	39,945	1902*.....	525,983	1,303,901
1889.....	24,752	60,289	1903*.....	293,510	733,230
1890.....	13,811	31,376	1904*.....	233,850	579,883
1891.....	14,648	32,582	1905*.....	224,908	540,909
1892.....	7,707	36,935	1906*.....	148,040	345,540

* See footnote to table 3, also table 4a, and remarks.

TABLE 4a.
IRON.
IMPORTS OF IRON ORE INTO THE UNITED STATES FROM CANADA.*

Year ending June 30.	Tons.	Year ending June 30.	Tons.
1893.....	6,880	1900.....	3,997
1894.....	269	1901.....	30,762
1895.....	2,394	1902.....	276,363
1896.....	35	1903.....	129,219
1897.....	2,263	1904.....	113,388
1898.....	1,172	1905.....	107,358
1899.....	2,308	1906.....	101,615

* Compiled from the "Foreign Commerce and Navigation of the United States."
26b-4½

Pig Iron :—The total production of pig iron in blast furnaces in Canada in 1906 was 598,411 short tons, valued at \$7,955,136 at the furnace, as compared with 525,306 tons, valued at \$6,475,186, in 1905. The production is over twice that made in 1903. Statistics of the production of pig iron, together with the iron ore, fuel and flux used, are given in table 5 for the years 1887 to 1906 inclusive. Previous to 1896 the pig iron manufactures were entirely from Canadian ore. Since that date, however, increasing quantities of imported ore have been used, which will be found separately stated in the table. Of the total production in 1906, 18,906 tons were made with charcoal and 579,509 tons with coke.

The production by provinces was as follows :—

—	Tons.	Value.
Nova Scotia	315,008	\$ 3,439,217
Quebec	7,845	177,644
Ontario	275,558	4,338,275
Total	598,411	\$ 7,955,136

The greater part of the ore charged to the Canadian furnaces continues to be imported. A large amount of the coke used, as well as a considerable portion of the limestone flux employed, is also imported. This metallurgical industry is, therefore, to a large extent dependent on imported raw material, a condition which is due to the commercial necessity of securing the raw material at a minimum cost whether this be secured in the country or out of it.

In 1906 a total of 1,204,473 tons of ore was charged to Canadian blast furnaces, of which 982,740 tons or 81·5 per cent were imported, chiefly from Newfoundland and the south shore of Lake Superior. It should be kept in mind, however, that a certain amount of ore from Canadian mines, chiefly Michipicoten, is exported to the United States. The development of important ore bodies at Bessemer and Moose Mountain, Ont., will probably also in the near future reduce the proportion of imported ore used.

TABLE 5.
IRON.
Pig Iron Production :—CONSUMPTION OF ORE, FUEL, etc.

CALENDAR YEAR.	IRON ORE CONSUMED.		Charcoal.		Coke.		Coal.		FUEL CONSUMED.		PIG IRON MADE.		
	Tons.	Value.	Bushels.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Value per ton.
1887.....	60,434	\$130,808	940,400	\$48,593	30,248	\$9,123	3,333	\$5,877	17,171	\$17,500	24,827	\$366,192	\$14.75
1888.....	54,956	102,343	804,286	41,800	28,031	82,986	2,197	4,709	16,837	16,533	21,799	313,235	14.37
1889.....	55,670	126,064	755,800	41,568	33,289	94,791	3,044	6,525	22,122	21,909	25,921	499,872	19.28
1890.....	57,304	117,880	589,860	29,493	32,832	97,659	1,241	2,638	18,478	18,361	21,772	331,688	15.23
1891.....	60,935	130,955	441,812	22,091	30,626	98,402	2,170	2,868	11,377	11,546	23,891	368,901	15.44
1892.....	96,948	250,966	1,121,365	78,291	50,882	152,311	1,740	1,797	22,967	21,687	42,448	637,421	15.02
1893.....	124,053	296,979	1,302,720	90,976	58,711	163,849	6,621	13,539	27,797	27,519	55,947	790,283	14.13
1894.....	108,871	223,861	1,173,970	53,958	52,373	142,303	7,653	14,571	35,101	34,347	49,967	646,447	12.94
1895.....	93,208	218,336	789,561	31,582	48,540	139,475	3,089	5,396	31,585	29,922	42,454	586,736	13.82
1896.....	(a) 96,560	200,887	756,600	32,256	(a) 48,660	106,939	(a) 1,407	2,288	37,462	36,140	67,268	924,129	13.74
1897.....	(b) 46,300	100,205			(b) 33,990	109,253			31,273	30,258	58,007	738,701	12.73
1898.....	(a) 53,658	131,705	1,031,800	43,230	(a) 35,800	71,600			33,913	31,153	77,015	912,395	11.85
1899.....	(b) 55,722	138,504			(b) 27,810	94,553			51,826	44,286	102,943	1,377,306	13.38
1900.....	(a) 57,881	151,760	836,400	41,820	(b) 31,952	63,904			52,966	39,332	96,575	1,501,698	15.55
1901.....	(b) 77,107	213,165			(b) 50,407	158,733			169,399	183,162	274,376	3,512,923	12.80
1902.....	(a) 66,384	216,322	1,928,025	87,858	(a) 44,844	134,532			293,594	219,295	337,902	4,243,541	11.85
1903.....	(b) 120,650	402,860			(a) 64,648	133,944			277,452	249,251	297,885	3,742,710	12.56
1904.....	(a) 71,341	184,191	1,799,737	82,408	(a) 45,021	180,084			211,278	177,595	303,454	3,687,985	12.15
1905.....	(b) 113,042	351,382			(a) 205,796	539,328			369,715	282,711	525,306	6,475,186	12.33
1906.....	(a) 156,613	544,144	1,835,736	100,978	(b) 59,345	255,892			456,036	356,733	598,411	7,955,136	13.29
	(b) 301,010	846,398			(b) 115,367	497,386							
	(a) 125,664	423,753	2,146,623	118,275	(a) 360,593	898,518							
	(b) 159,381	964,973			(b) 112,314	494,438							
	(a) 82,035	247,229	2,322,030	152,717	(a) 350,190	819,016							
	(b) 485,911	823,147			(b) 96,540	556,091							
	(a) 180,932	480,687	3,477,470	191,404	(a) 257,182	739,585							
	(b) 454,671	922,594			(b) 130,210	551,445							
	(a) 116,974	351,965	4,404,394	222,156	(a) 365,897	962,518							
	(b) 861,847	1,802,539			(b) 243,882	1,233,515							
	(a) 221,733	683,238	2,168,476	125,992	(a) 462,672	1,248,737							
	(b) 982,740	1,984,720			(b) 304,676	1,607,324							

(a) Canadian. (b) Imported.

In the tabulated statement showing the mineral production of Canada, the production from Canadian ore only is given. This has been arrived at by separating the total production at each furnace into two classes, viz., pig iron from Canadian ore and pig iron from imported ore, the separation being made on the basis of the Canadian and imported ore entering into the production of pig iron at each respective furnace.

The production for the past eleven years separated in this way has been as follows :—

Calendar Year.	Pig iron from Canadian ore.	Pig iron from Imported ore.
	Tons.	Tons.
1896.....	40,720	26,548
1897.....	26,200	31,807
1898.....	30,553	46,462
1899.....	34,244	68,699
1900.....	35,387	61,188
1901.....	83,100	191,276
1902.....	71,664	286,238
1903.....	42,052	255,833
1904.....	68,297	235,157
1905.....	68,170	457,136
1906.....	104,660	493,751

During the year there were thirteen furnaces in blast for varying periods, operated by the following companies :—

Dominion Iron and Steel Co., Sydney, C.B., four completed furnaces of 275 tons capacity each per day, all of which were operated during the year.

Nova Scotia Steel and Coal Co., New Glasgow, N.S., one furnace at Sydney Mines, C.B., of 200 tons capacity.

Londonderry Iron and Mining Co., Limited, Londonderry, N.S., one furnace of 100 tons capacity.

John McDougall & Co., Montreal, Que., two small furnaces at Drummondville, Que., one of which was operated the whole year.

Canada Iron Furnace Co., Ltd., Montreal, Que., one furnace of 150 tons at Midland, Ont.

SESSIONAL PAPER No. 26b

Deseronto Iron Co., Ltd., Deseronto, Ont., one furnace with a daily capacity of about 35 tons.

Hamilton Steel and Iron Co., Hamilton, Ont., one furnace of 300 tons capacity operated throughout the year, and a second furnace of 300 tons in course of construction.

Algoma Steel Co., Ltd., Sault Ste Marie, Ont., two furnaces at Steelton near Sault Ste Marie, of a combined capacity of about 400 tons.

The Atikokan Iron Co., Ltd., was also building at Port Arthur Ont., a furnace with a capacity of about 100 tons per day.

Of the fourteen completed furnaces nine were in blast and five were idle, on Dec. 31, 1906. The total capacity of the fourteen furnaces, if in continuous operation, would be about 800,000 tons per annum.

The number of men employed was 1,808, and about \$1,000,000 was paid in wages.

Bounties :—Bounties on iron and steel, made in Canada, were provided for by the Dominion government in 1897 (chapter 6, Statutes of Canada, 1897.) This Act was amended in 1899 (chapter 8, Statutes of Canada, 1899), and again in 1903 (chapter 68, Statutes of Canada, 1903).

The Act of 1903 also provides for the gradual extinguishment of the bounties authorized in 1897 as follows :—

Period.	On steel ingots, puddled iron bars, and pig iron from Canadian ore.	On pig iron from foreign ore.
	Per ton.	Per ton.
From July 1, 1903 to June 30, 1904.....	\$ 2 70	\$ 1 80
" 1904 " " 1905.....	2 25	1 50
" 1905 " " 1906.....	1 65	1 10
" 1906 " " 1907.....	1 05	0 70

The payments by the Dominion Government on account of iron and steel bounties during the fiscal year ending June 30, 1906, were as follows, the figures having been compiled from the Auditor General's Report for 1906.

7-8 EDWARD VII., A. 1908

BOUNTIES PAID ON PIG IRON MANUFACTURED IN CANADA, FISCAL YEAR 1905-6.

Company.	On Pig Iron from Canadian Ore.		On Pig Iron from Imported Ore.		Total Bounties.
	Tons.	Bounties.	Tons.	Bounties.	
		\$ cts.		\$ cts.	\$ cts.
Algoma Steel Co., Ltd....	4,640·01	7,656 15	145,239·82	159,763 81	167,419 96
Canada Iron Furnace Co. Ltd.—					
Midland, Ont.	31,09·00	51 31	29,055·90	31,961 47	32,012 78
Radnor Forges, Que....	3,615·48	5,965 54	2,070·35	2,277 39	8,242 93
Deseronto Iron Co.,	674·00	1,122 10	11,411·00	12,552 10	13,664 20
Dominion Iron and Steel Co.	5·64	9 30	223,948·94	246,343 83	246,353 13
Hamilton Steel and Iron Co., Ltd.	43,634·58	71,997 03	24,449·79	26,894 75	98,891 78
John McDougall & Co....	2,695·19	4,447 06	.....	.....	4,447 06
Londonderry Iron & Min- ing Co., Ltd.	31,227·38	51,525 16	.....	.....	51,525 16
Nova Scotia Steel and Coal Co., Ltd. ....	.....	.....	59,158·90	65,074 79	65,074 79
	86,523·468	142,763 65	495,334 70	544,868 14	687,631 79

BOUNTY ON STEEL INGOTS AND PUDDLED IRON BARS, FISCAL YEARS 1905-6.

Company.	Tons.	Bounty.
		\$ cts.
Algoma Steel Company, Steel Ingots	222,891·06	367,770 24
Dominion Iron and Steel Co., Ltd., Steel Ingots.....	246,356·02	406,487 47
Steel Ingots made during the year 1903-4.....	771·53	2,083 13
Hamilton Steel and Iron Co., Ltd., Steel Ingots.. ...	41,124·60	67,855 55
Puddled Iron Bars.....	3,560·42	5,874 71
Nova Scotia Steel and Coal Co., Ltd., Steel Ingots.....	56,915·64	93,910 79
	571,619·27	943,981 89

BOUNTIES PAID ON ARTICLES MANUFACTURED FROM STEEL, FISCAL YEAR 1905-6.

Company.	Tons.	Bounty.
		\$ cts.
Dominion Iron and Steel Co., Ltd.—		
Steel Wire Rods at \$6.....	50,184·45	301,106 73
" " Arrears of 1904-5 at \$6.....	217·775	1,306 65
Hamilton Steel and Iron Co., Ltd.—		
Steel Angles at \$3.....	11,405·73	34,217 19
Montreal Rolling Mills Co.—		
Rail Joints, Slates, etc., at \$3.	2,462·19	7,386 56
Nova Scotia Steel and Coal Co.—		
Plates, Angles, etc. at \$3.....	8,604·86	25,814 60
	72,875·005	369,831 73

SESSIONAL PAPER No. 26b

TOTAL BOUNTIES PAID TO EACH COMPANY, FISCAL YEAR ENDING JUNE 30, 1906.

Algoma Steel Co., Ltd.....	\$ 535,190 20
Canada Iron Furnace Co., Ltd.....	40,255 71
Deseronto Iron Co., Ltd.....	13,664 20
Dominion Iron and Steel Co., Ltd.....	957,337 11
Hamilton Steel and Iron Co., Ltd.....	206,839 23
John McDougall & Co.....	4,447 06
Londonderry Iron and Mining Co., Ltd.....	51,525 16
The Montreal Rolling Mills Co.....	7,386 56
Nova Scotia Steel and Coal Co., Ltd.....	187,692 79
	<hr/>
	2,004,338 02

The total amount of bounties on iron and steel paid by the Dominion Government during the fiscal year ending June 30, 1906, was, therefore, as follows :—

Bounties on pig iron.....	\$ 687,631 79
" steel ingots and puddled iron bars.....	943,981 89
" articles manufactured from steel.....	369,831 73
Arrears to Nova Scotia Steel and Coal Co., Ltd., from July 1903 to July 1905.....	2,892 61
	<hr/>
	2,004,333 02

Since the first of January 1907, the rate of bounty payment on iron and steel has been changed by an Act assented to 27th April 1907, (Chapter 24, Statutes of Canada, 1907). The new Act governing bounty payments is as follows :—

An Act respecting Bounties on Iron and Steel made in Canada.

(Assented to 27th April, 1907).

His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows :—

1. The Governor in Council may authorize the payment out of the Consolidated Revenue Fund of the following bounties on the under-mentioned articles when manufactured in Canada for consumption therein, viz. :—

(a) In respect of pig iron manufactured from ore, on the proportion from Canadian ore produced during the calendar year —

1907.....	\$2 10 per ton.
1908.....	2 10 "
1909.....	1 70 "
1910.....	0 90 "

(b) In respect of pig iron manufactured from ore, on the proportion from foreign ore produced during the calendar year—

1907.....	\$1 10 per ton.
1908.....	1 10 "
1909.....	0 70 "
1910.....	0 40 "

(c) On puddled bar iron manufactured from pig iron made in Canada during the year.

1907.....	\$1 65 per ton.
1908.....	1 65 "
1909.....	1 05 "
1910.....	0 60 "

(d) In respect of rolled, round wire rods not over three-eighths of an inch diameter, manufactured in Canada from steel produced in Canada from ingredients of which not less than fifty per cent of the weight thereof consists of pig iron made in Canada, on such wire rods made after the thirty-first day of December, one thousand nine hundred and six, six dollars per ton.

(e) In respect of steel manufactured from ingredients of which not less than fifty per cent of the weight thereof consists of pig iron made in Canada, on such steel made during the calendar year—

1907	\$1 65 per ton.
1908.....	1 65 "
1909.....	1 05 "
1910.....	0 60 "

2. No bounty shall be paid under the foregoing provisions in respect of iron or steel made in Canada by electric process after the thirty-first day of December, one thousand nine hundred and eight.

1. The Governor in Council may authorize the payment out of the Consolidated Revenue Fund of the following bounties on the under-mentioned articles when manufactured in Canada for consumption therein, viz. :—

(a) On pig iron manufactured from Canadian ore by the process of electric smelting during the calendar year—

1909.....	\$2 10 per ton.
1910.....	2 10 "
1911.....	1 70 "
1912.....	0 90 "

(b) On steel manufactured by electric process from pig iron smelted in Canada by electricity from Canadian ore during the calendar year—

1909.....	\$1 65 per ton.
1910.....	1 65 "
1911.....	1 05 "
1912.....	0 60 "

2. Bounty, as on pig iron under this section, may be paid upon the molten iron from the ore which in the electric furnace enters into the manufacture of steel by the direct process, the weight of the steel so manufactured.

SESSIONAL PAPER No. 26b

3. No bounty shall be paid on steel ingots from which steel blooms and billets for exportation from Canada are manufactured.

4. The Governor in Council may make regulations to carry out the intention of this Act.

5. The Minister of Trade and Commerce shall be charged with the administration of this Act.

6. Chapter 8 of the Statutes of 1899, Chapter 68 of the Statutes of 1903, and Chapter 39 of the Statutes of 1904, are repealed.

7. This Act shall be deemed to have come into force on the first day of January, one thousand nine hundred and seven.

Table 6 illustrates the extent of the foreign trade of the country in regard to iron and steel products and machinery, etc., made therefrom.

TABLE 6.

IRON.

EXPORTS OF IRON AND STEEL GOODS, THE PRODUCT OF CANADA.

Calendar Year 1905.	Quantity.	Value.
		\$
Stoves..... No.	974	10,295
Castings, N.E.S..... \$		48,903
Pig iron.....Tons.	305	7,429
Machinery, N.E.S..... \$		424,057
Sewing machines..... No.	1,477	33,690
Typewriters..... "	5,502	164,466
Scrap iron and steel..... Cwt.	258,938	235,913
Hardware..... \$		164,649
Steel and manufactures of..... "		463,561
Total.....		1,552,963

The Canadian consumption of iron and steel products is illustrated in the following tables, Nos. 7, 8, 9, 10a, 10b, and 11. The first three of these deal with the cruder forms of the metal; the next two, with manufactured articles wholly or largely composed of iron and steel, while the last table summarizes all the preceding ones. They all cover the fiscal year ending June 30, 1906.

TABLE 7.

IRON.

IMPORTS OF IRON, PIG, SCRAP, ETC.

Fiscal Year.	Pig Iron.		Charcoal Pig Iron.		Old and Scrap Iron.		Wrought Scrap and Scrap Steel.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1880	(a) 23,159	371,956	.....	.....	928	14,042	.....	.....
1881	(a) 43,630	715,997	.....	.....	584	8,807	.....	.....
1882	56,594	811,221	6,837	211,791	1,327	20,406	.....	.....
1883	75,295	1,085,755	2,198	58,994	709	7,776	.....	.....
1884	49,291	653,708	2,893	66,602	3,136	44,223	.....	.....
1885	42,279	545,426	1,119	27,333	3,552	46,275	.....	.....
1886	42,463	528,483	3,185	60,086	10,151	158,100	.....	.....
1887	46,295	554,388	3,919	77,420	17,612	220,167	(b) 79	1,086
	Pig Iron, etc.		(c)					
	Tons.	Value.						
		\$						
1888	48,973	648,012	.....	.....	.....	.....	23,293	297,496
1889	72,115	864,752	.....	.....	.....	.....	26,794	335,090
1890	87,613	1,148,078	.....	.....	.....	.....	47,846	678,574
1891	81,317	1,085,929	.....	.....	.....	.....	43,967	652,842
1892	68,918	886,485	.....	.....	.....	.....	32,627	433,695
	Pig Iron.		Charcoal Pig Iron.		Cast Scrap Iron.			
	Tons.	Value.	Tons.	Value.	Tons.	Value.		
		\$		\$		\$		
1893	56,849	682,209	5,944	84,358	729	9,317	45,459	574,809
1894	42,376	483,787	2,906	34,968	78	771	30,850	369,682
1895	31,637	341,259	2,780	31,171	643	4,347	23,390	244,388
1896	36,131	394,591	917	11,726	93	741	13,607	157,996
1897	25,766	291,788	2,936	35,373	238	1,362	7,903	93,541
1898	37,186	382,103	2,250	23,533	1,559	13,251	(e) 48,903	534,577
1899	44,261	452,911	1,955	19,123	2,378	22,594	(e) 28,352	301,268
1900	49,767	811,490	1,816	38,736	13,747	150,681	(e) 38,753	638,505
1901	35,293	548,033	490	7,121	4,499	51,032	(e) 24,773	242,189
1902	39,978	585,077	38	726	3,048	38,958	(e) 36,150	520,909
1903	91,730	1,338,574	(f) 882	16,352	7,137	94,028	(e) 43,115	670,402
1904	62,515	894,728	.....	.....	11,385	149,923	(e) 21,027	298,806
1905	71,005	857,879	.....	.....	6,533	75,521	(e) 15,479	210,900
1906	(d) 96,797	1,401,047	.....	.....	(f) 4,866	60,086	(e) 21,223	326,489

(a) Comprises pig iron of all kinds.

(b) From May 13 only.

(c) These figures appear in Customs reports under heading 'Iron in pigs, Iron kentledge and cast-iron.'

(d) Includes iron kentledge. Duty \$2.50 per ton.

(e) Scrap iron and scrap steel, old, and fit only to be remanufactured, being part of, or recovered from, any vessel wrecked in waters subject to the jurisdiction of Canada. Duty free.

Iron or steel scrap, wrought, being waste or refuse, including punchings, cuttings and clippings of iron or steel plates or sheets, having been in actual use, crop ends of tin plate bars, blooms and rails, the same not having been in actual use. Duty \$1 per ton.

(f) Duty \$2.50 per ton.

TABLE 8.

IRON.

IMPORTS OF FERRO-MANGANESE, ETC.

Fiscal Year.	Tons.	Value.
*1887	123	\$ 1,435
*1888	1,883	29,812
*1889	5,868	72,108
*1890	696	18,895
*1891	2,707	40,711
*1892	1,311	23,930
*1893	529	15,858
*1894	284	9,885
†1895	164	5,408
†1896	652	12,811
†1897	426	9,233
†1898	1,418	22,516
†1899	1,160	22,539
†1900	1,149	39,064
†1901	1,512	38,954
†1902	6,513	150,977
†1903	6,350	162,710
†1904	2,975	75,554
†1905	12,935	246,815
†1906..... (Duty, 5 p.c.)	15,023	462,739

* These amounts include :—Ferro-manganese, ferro-silicon, spiegel, steel bloom ends and crop ends of steel rails, for the manufacture of iron or steel.

† Ferro-silicon, spiegeleisen, and ferro-manganese.

TABLE 9.

IRON.

IMPORTS : IRON IN SLABS, BLOOMS, LOOPS AND PUDDLED BARS, ETC.

Fiscal Year.	Cwt.	Value.	Fiscal Year:	Cwt.	Value.
1880	195,572	\$244,601	1893	65,269	\$58,533
1881	111,666	111,374	1894	50,891	45,018
1882	203,888	222,056	1895	78,639	67,321
1883	258,639	269,818	1896	128,535	110,757
1884	252,310	264,045	1897	56,560	48,954
1885	312,329	287,734	1898	162,891	122,426
1886	273,316	248,461	1899	124,311	103,198
1887	522,853	421,598	1900	255,145	362,463
1888	110,279	93,377	1901	234,925	206,975
1889	80,383	67,181	1902	401,306	419,543
1890	15,041	45,923	1903	394,418	380,034
1891	41,567	38,931	1904	200,295	216,571
1892	64,397	56,186	1905	317,829	319,665
			1906 ^a	650,943	663,794

* Iron or steel ingots, cogged ingots, blooms, slabs, billets, puddled bars, and loops or other forms, N.O.P., less finished than iron or steel bars, but more advanced than pig iron except castings. Duty \$2 per ton.

TABLE 10a.

IRON.

IMPORTS OF IRON AND STEEL GOODS.—1905-1906.

Fiscal Year, 1906.	Duty.	Quantity.	Value.
Bar iron or steel rolled, whether in coils, bundles, rods or bars, comprising rounds, ovals, squares and flats and rolled shapes, N.O.P. Cwt.	\$7 per ton.	987,429	\$ 1,541,729
Castings, iron or steel, in the rough, N.E.S. \$	25 %	.....	385,792
Canada plates, Russia iron, flat galvanized iron or steel sheets, terne plates and rolled sheets of iron or steel coated with zinc, spelter or other metal, of all widths or thicknesses, N.O.P. Cwt.	5 "	303,735	699,744
Iron or steel bridges or parts thereof, iron or steel structural work, columns, shapes or sections drilled, punched, or in any further stage of manufacture than as rolled or cast, N.E.S. "	35 "	185,678	508,346
Malleable iron castings and iron or steel castings, N.E.S. "	25 "	4,957	16,819
Mould boards, or shares or plough plates, land sides and other plates for agricultural implements, cut to shape from rolled plates of steel but not moulded, punched, polished or otherwise manufactured. "	5 "	67,845	189,327
Iron or steel railway bars or rails of any form, punched or not punched, N.E.S., for railways, which term for the purposes of this item shall include all kinds of railways, street railways and tramways, even although the same are used for private purposes only, and even although they are not used or intended to be used in connexion with the business of common carrying of goods or passengers. Tons.	30 "	49,878	1,214,548
Railway fish-plates and tie plates. "	\$8 per ton.	4,387	172,267
Rolled iron or steel angles, tees, beams, channels, joists, girders, zeels, stars or rolled shapes, or trough, bridge, building, or structural rolled sections, or shapes not punched, drilled or further manufactured than rolled, N.E.S., and flat-eye-bar blanks not punched or drilled. Cwt.	10 %	1,066,653	1,431,999
Rolled iron or steel hoop, band, scroll or strip, 8 inches or less in width, No. 18 gauge and thicker, N.E.S. "	\$7 per ton.	63,296	109,530
Rolled iron or steel hoop, band, scroll or strip, thinner than No. 18 gauge, N.E.S. "	5 %	56,958	131,550
Rolled iron or steel angles, tees, beams, channels, girders and other rolled shapes or sections, weighing less than 35 lbs. per lineal yard, not punched, drilled or further manufactured than rolled, N.O.P. "	\$7 per ton.	376,692	540,013
Rolled iron or steel plates or sheets, sheared or unsheared, and skelp iron or steel, sheared or rolled in grooves, N.E.S. "	\$7 "	256,235	394,274
Rolled iron or steel plates, not less than 30 inches in width and not less than $\frac{1}{4}$ inch in thickness, N.O.P. "	10 %	589,151	904,252
Carried forward.			8,240,190

SESSIONAL PAPER No. 26b

TABLE 10a—Continued.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1906.	Duty.	Quantity.	Value.
			\$
Brought forward.....			8,240,190
Rolled iron or steel sheets No. 17 gauge and thinner, N.O.P..... Cwt.	5 p. c.	342,850	719,180
Rolls of chilled iron or steel..... "	30 "	10,496	34,172
Skelp iron or steel, sheared or rolled in grooves, imported by manufacturers of wrought iron or steel pipe for use only in the manufacture of wrought iron or steel pipe in their own factories..... "	5 "	680,729	888,257
Swedish rolled iron and Swedish rolled steel nail rods under half an inch in diameter for the manufacture of horse-shoe nails... "	15 "	20,459	42,429
Switches, frogs, crossings and intersections for railways..... "	30 "	13,746	55,120
Steel—chrome steel..... "	15 "	5,275	24,614
Steel plate, universal mill or rolled edge bridge plates imported by manufacturers of bridges..... "	10 "	243,768	347,360
Steel in bars, bands, hoops, scroll or strips, sheets or plates, of any size, thickness or width when of greater value than 2½c. per lb., N.O.P..... "	5 "	173,240	856,354
Iron or steel beams, sheets, plates, angles, knees and cable chains for wooden, iron, steel, or composite ships or vessels..... "	Free.	210,753	315,664
Locomotive and car wheel tires of steel, in the rough..... "	"	80,365	161,914
Steel for saws and straw cutters cut to shape, but not further manufactured..... "	"	11,511	131,399
Crucible sheet steel, 11 to 16 gauge, 2½ to 18 inches wide, imported by manufacturers of mower and reaper knives for manufacture of such knives in their own factories..... "	"	10,337	42,702
Steel of No. 20 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of corset steels, clock springs and shoe shanks imported by the manufacturers of such articles for the exclusive use in the manufacture thereof in their own factories..... "	"	60	278
Steel valued at 2½ cents per lb. and upward, imported by the manufacturers of skates, for use exclusively in the manufacture thereof in their own factories..... "	"	3,592	16,007
Steel, under ½ inch in diameter, or under ½ inch square, imported by the manufacturers of cutlery, or of knobs, or of locks, for use exclusively in the manufacture of such articles in their own factories..... "	"	3,095	7,701
Carried forward.....			11,883,341

TABLE 10a—*Concluded.*

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1906.	Duty.	Quantity.	Value.
Brought forward.....			11,883,341
Steel, No. 12 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of buckle clasps, bed fasts, furniture casters and ice creepers, imported by the manufacturers of such articles, for use exclusively in the manufacture thereof in their own factories..... Cwt.	Free.	2,099	5,379
Steel of No. 24 and 17 gauge, in sheets sixty-three inches long, and from 18 inches to 32 inches wide, imported by the manufacturers of tubular bow sockets for use in the manufacture of such articles in their own factories..... "	"	1,174	2,349
Steel for the manufacture of bicycle chains, imported by the manufacturers of bicycle chain for use in the manufacture thereof in their own factories..... "	"	178	680
Steel for the manufacture of files, augers, auger bits, hammers, axes, hatchets, scythes, reaping hooks, hoes, hand rakes, hay or straw knives, windmills and agricultural or harvesting forks imported by the manufacturers of such or any of such articles for use exclusively in the manufacture thereof in their own factories.... "	"	99,399	198,970
Steel springs for the manufacture of surgical trusses imported by the manufacturers for use exclusively in the manufacture thereof in their own factories..... "	"	980	443
Flat spring steel, steel billets and steel axle bars, imported by manufacturers of carriage springs and carriage axles for use exclusively in the manufacture of springs and axles for carriages or vehicles other than railway or tramway, in their own factories.... "	"	93,125	127,105
Spiral spring steel for spiral springs for railways, imported by the manufacturers of railway springs for use exclusively in the manufacture of railway spiral springs in their own factories..... "	"	73,117	123,460
Steel for the manufacture of cutlery when imported by manufacturers of cutlery to be used in their own factories in the manufacture of such article, O.C..... "	"	271	637
Total.....			12,342,364

SESSIONAL PAPER No. 26b

TABLE 106.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1906.		Duty.	Quantity.	Value.
				\$
Agricultural implements, N.E.S., viz:—				
Cultivators and weeders	No.	20 %	3,828	26,297
Drills, grain seeders,	"	20 "	2,835	117,233
Farm, road or field rollers	"	25 "	10	204
Forks, pronged	"	25 "	8,565	5,249
Harrows	"	20 "	4,386	66,202
Harvesters, self binding	"	20 "	927	95,846
Hay loaders	"	25 "	582	26,435
Hay tedders	"	25 "	815	34,076
Hoes	"	25 "	4,902	873
Horse rakes	"	20 "	929	21,587
Knives, hay or straw	"	25 "	1,265	60
Lawn mowers	"	35 "	2,697	13,404
Manure spreaders	"	20 "	1,133	108,054
Mowing machines	"	20 "	766	24,692
Ploughs	"	20 "	17,033	477,703
Post hole diggers	"	25 "	1,485	1,326
Potato diggers	"	25 "	226	7,484
Rakes, N.E.S.	"	25 "	9,620	1,822
Reapers	"	20 "	284	13,872
Scythes	Doz.	25 "	2,000	10,043
Sickles or reaping hooks	"	25 "	41	185
Spades and shovels and spade and shovel blanks, and iron or steel cut to shape for the same	"	35 "	15,113	46,762
Parts of agricultural implements paying 20 p.c.	\$	20 "		472,771
All other agricultural implements, N.E.S.	"	25 "		42,384
Anvils and vises	"	30 "		50,792
Cart or wagon skeins or boxes	Lbs.	30 "	167,454	9,404
Springs, axles, axle bars, N.E.S., and axle blanks and parts thereof of iron or steel, for railway or tramway or other vehicles	Cwt.	35 "	68,948	143,874
Butts and hinges, N.E.S.	\$	30 "		92,656
Cast iron pipe of every description	Cwt.	\$8 per ton	343,404	447,450
Chains, coil chains, chain links and chain shackles of iron or steel 5-16 of an inch in diameter and over	"	5 %	40,617	141,639
Chain, malleable sprocket or link belt-ing, for binders	\$	20 "		43,988
Chains, N.E.S.	"	30 "		99,188
Tacks, shoe	Lbs.	35 "	20,886	2,442
Cut tacks, brad sprigs, or shoe nails, double pointed, and other tacks of iron and steel, N.O.P.	"	35 "	77,130	4,858
Engines, locomotives for railways, N.E.S.	No.	35 "	85	338,179
Fire engines	"	35 "	5	4,150
Fire extinguishing machines	"	35 "		53,298
Gasoline engines	"	25 "	2,068	405,323
Steam engines and boilers	"	25 "	1,698	596,299
Fittings, iron or steel, for iron and steel pipe	Lbs.	30 "	6,696,592	386,834
Carried forward				4,434,937

TABLE 10b—Continued.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1906.	Duty.	Quantity.	Value.
			\$
Brought forward			4,434,937
Forgings of iron or steel, of whatever shape or size, or in whatever stage of manufacture, N.E.S., and steel shafting, turned, compressed or polished, and hammered iron or steel bars or shapes, N.O.P. Lbs.	30 %	4,098,111	170,326
Hardware, viz:—			
Builders', cabinet-makers', upholsterers', harness-makers', saddlers' and carriage hardware, including currycombs and horse boots, N.E.S. \$	30 "		752,110
Horse, mule and ox shoes. "	30 "		14,337
Locks of all kinds. "	30 "		283,306
Machines and machinery, etc.:—			
Automobiles. No.	25 "	448	645,871
Fanning mills. "	25 "	267	3,144
Grain crushers. "	25 "	1	71
Windmills. "	25 "	909	41,934
Ore crushers and rock crushers, stamp mills, cornish and belted rolls, rock drills, air compressors, cranes, derricks and percussion coal cutters. \$	25 "		206,593
Portable machines:—			
Fodder or feed cutters. No.	25 "	27	704
Horse powers. "	25 "	11	556
Portable engines. "	25 "	638	717,785
Portable saw mills and planing mills. "	25 "	73	31,382
Threshers and separators. "	25 "	652	359,986
All other portable machines. "	25 "	925	102,133
Parts of portable machines. \$	25 "		142,124
Sewing machines and parts of. No.	30 "	14,138	284,189
Slot machines. "	25 "	2,388	41,603
Machines, type-writing. "	25 "	4,933	283,323
All other machinery composed wholly or in part of iron or steel, N.O.P. \$	25 "		5,331,714
Nails and spikes, composition and sheathing nails. Lbs.	15 "	11,159	1,319
Nails and spikes, wrought and pressed, trunk, clout, coopers, cigar box, Hungarian horseshoe and other nails, N.E.S. "	30 "	207,647	14,115
Nails and spikes, cut, and railway spikes. "	1/2 c. per lb.	2,138,075	39,278
Nails, wire of all kinds, N.O.P. "	3/4 c. "	530,275	18,318
Pumps, N.E.S. \$	25 %		261,220
Sad or smoothing, hatters' or tailors' irons, plated wholly or in part or not. "	25 "		16,718
Safes, doors for safes and vaults. "	30 "		114,131
Screws, iron and steel, commonly called 'woodscrews,' N.E.S. Lbs.	35 "	208,823	29,481
Scales, balances, weighing beams and strength testing machines. \$	30 "		134,401
Skates of all kinds and parts thereof. Pairs	35 "	86,826	49,628
Stoves of all kinds and parts thereof, N.E.S. \$	25 "		472,981
Sheets, flat, of galvanized iron or steel. Cwt.	5 "	369,580	1,101,128
Carried forward.			16,100,846

SESSIONAL PAPER No. 26b

TABLE 10b—Continued.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1906.	Duty.	Quantity.	Value.
			\$
Brought forward.....			16,100,846
Sheet iron or steel corrugated, galvanized.. Cwt.	25 "	3,296	9,520
Sheet iron or steel corrugated not galvanized "	30 "	887	2,191
Tubing:—			
Boiler tubes of wrought iron or steel, including flues and corrugated tubes for marine boilers..... \$	5 %		472,768
Tubes of rolled steel, seamless, not joined or welded, not more than 1½ inches in diameter..... "	10 "		4,199
Tubes, seamless steel, for bicycles..... "	10 "		10,214
Tubing, wrought iron or steel, plain or galvanized, threaded and coupled or not, over 2 inches in diameter, N.E.S. "	15 "		554,459
Tubing, wrought iron or steel, plain or galvanized, threaded and coupled or not, 2 inches or less in diameter, N. E.S. "	35 "		109,675
Other iron or steel tubes or pipes, N.O.P. "	30 "		59,036
Ware, galvanized sheet iron or of galvanized sheet steel, manufactures of, N.O.P. "	25 "		27,821
Ware, agate, granite or enamelled iron or steel hollow ware..... "	35 "		75,935
Ware, enamelled iron or steel ware, N. E.S., iron or steel hollow ware, plain black, tinned or coated, and nickel and aluminium kitchen or household hollow ware, N.E.S. "	30 "		167,833
Wire bale ties..... Bundles of 250 ties	30 "	3,743	4,932
Wire cloth or wove wire and netting of iron or steel..... Lbs.	30 "	1,132,220	67,813
Wire screens, doors and windows..... \$	30 "		5,950
Wire fencing, woven, buckthorn strip and wire fencing of iron or steel, N.E.S. Lbs.	15 "	1,757,932	73,068
Wire, single or several, covered with cotton, linen, silk, rubber or other material, etc., N.E.S. "	30 "	2,223,542	355,841
Wire of all kinds, N.O.P. "	20 "	10,689,693	245,443
Wire rope, stranded or twisted wire, clothes lines, picture or other twisted wire and wire cables, N.E.S. "	25 "	3,005,328	209,674
Iron or steel nuts, washers, rivets and bolts with or without threads and nut bolt and hinge blanks, and T. and strap hinges of all kinds, N.E.S. "	$\frac{3}{4}$ c.p. lb. and 25 %	3,006,047	118,357
Pen-knives, jack-knives and pocket knives of all kinds..... \$	30 %		142,550
Table cutlery, all kinds, N.O.P. "	30 "		260,403
All other cutlery, N.E.S. "	30 "		335,742
Guns, rifles, including air guns and air rifles, (not being toys) muskets, cannons, pistols, revolvers, or other firearms "	30 "		434,674
Carried forward			19,848,944

TABLE 10b—Continued.

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1906.	Duty.	Quantity.	Value.
			\$
Brought forward.....			19,848,944
Bayonets, swords, fencing foils and masks.. "	30 "		2,487
Needles of any material or kind, not otherwise provided .. "	30 "		81,415
Tools and implements :—			
Adzes, cleavers, hatchets, wedges, sledges, hammers, crow bars, cant dogs and track tools, picks, mattocks and eyes or poles for the same..... \$	30 %		87,025
Axes..... Doz.	25 "	6,051	35,123
Saws..... \$	30 "		206,528
Files and rasps, N.E.S. "	30 "		88,211
Tools, hand or machine, of all kinds, N.O.P. "	30 "		119,661
Knife blades, or blanks, and forks of iron or steel, in the rough, not handled, filed, ground or otherwise manufactured.. "	10 "		70
Manufactures : articles or wares not specially enumerated or provided for, composed wholly or in part of iron or steel, and whether partly or wholly manufactured. "	30 "		3,017,901
Anchor..... Cwt.	Free	4,795	18,043
Iron or steel, rolled round wire rods, in the coil not over $\frac{3}{8}$ -inch in diameter, imported by wire manufacturers for use in making wire in the coil in their own factories	"	376,220	478,991
Iron or steel masts, or parts of	"	18	367
Rolled iron tubes not welded, or joined, under $1\frac{1}{2}$ inch in diameter, angle iron 9 and 10 gauge, not over $1\frac{1}{2}$ inch wide, iron tubing lacquered or brass covered, not over $1\frac{1}{2}$ inch diameter, all of which are to be cut to lengths for the manufacture of bedsteads, and to be used for no other purpose, and brass trimmings for bedsteads imported for the manufacture of iron or brass bedsteads..... "	"		212,340
Steel bowls for cream separators, and cream separators	\$		625,510
Cream separators : articles for the construction or manufacture of—when imported by manufacturers of cream separators to be used in their own factories for the manufacture of cream separators, O.C.... "	"		95,578
Steel strip and flat steel wire imported by manufacturers of buckthorn and plain strip fencing, for use in their own factories in the manufacture thereof..... "	"	80	277
Carried forward.....			25,818,471

SESSIONAL PAPER No. 26b

TABLE 10b—*Concluded.*

IRON.

IMPORTS OF IRON AND STEEL GOODS.

Fiscal Year, 1906.	Duty.	Quantity.	Value.
Brought forward			\$ 25,818,471
Steel wire, Bessemer soft drawn spring of Nos. 10, 12 and 13 gauge respectively, and homo steel spring wire of Nos. 11 and 12 gauge, respectively, imported by manufacturers of wire mattresses, to be used in their own factories in the manufacture of such articles. "	Free.	3,675	9,186
Machinery and structural iron for beet root sugar factories. \$	"		7,043
Flat steel wire of No. 16 gauge or thinner imported by the manufacturers of crinoline, corset wire and dress stays, for use in the manufacture of such articles in their own factories. Cwt.	"	3,885	22,451
Wire, crucible cast steel Lbs.	"	2,427,406	115,541
Galvanized iron or steel wire Nos. 9, 12 and 13 gauge. Cwt.	"	545,339	1,076,589
Barbed fencing wire of iron and steel. "	"	446,212	929,660
Total			27,998,941

TABLE 11.

IRON.

IMPORTS OF PIG IRON, IRON AND STEEL GOODS, ETC., FISCAL YEAR, 1905-1906.

Recapitulation of Tables, 7, 8, 9, 10a and 10b.

	Tons.	Value.
Pig iron	96,797	\$1,401,047
Pig iron, charcoal.		
Scrap iron, cast.	4,866	60,086
Scrap steel, wrought.	21,223	326,489
Ferro-manganese, etc.	15,023	462,739
Iron in slabs, blooms, puddled bars, etc.	32,547	663,794
Iron and steel goods partially manufactured.		12,342,364
Iron and steel goods more highly manufactured*		27,978,941
Total		43,235,480

* Machinery, etc., classed under iron and steel goods in Customs report.

LEAD.

The total production of lead in Canada in 1906 was 54,608,217 pounds, valued at \$3,089,187 or 5·657 cents per pound, the final New York value of refined lead. Compared with the previous year the production in 1906 shows a slight falling off, the decrease being 2,256,698 pounds or about 3·9 per cent. Although a small amount of lead is annually mined in Ontario, the great bulk of the output has been derived from the silver lead ores of East and West Kootenay, British Columbia. The lead industry has by no means enjoyed continuous prosperity. A maximum output was reached in 1900, with a production of 63,169,821 pounds; in 1903 the output had diminished to 18,139,283 pounds, though in the following years a rapid increase again occurred.

In 1901, and again in 1903, the Dominion Government, to encourage the lead industry, authorized the payment of a bounty on the production of lead. The act of 1903 provided for the payment under certain restrictions of seventy-five cents per hundred pounds on lead contained in ore mined in Canada, provided that when the standard price of pig lead in London, England, exceeds twelve pounds ten shillings per ton of 2240 pounds, such bounty shall be reduced proportionately by the amount of such excess. Thus, when the price of lead in London rises to £16 or over per long ton, the bounty ceases. As the price of lead exceeded £16 sterling on the London market for a considerable period during 1906, the total amount of bounty paid was only \$40,541, as compared with \$334,224 in 1905.

The average monthly price of lead on the New York market during 1906 was 5·657 cents per pound, as compared with 4·707 cents in 1905, or an increase of 0·950 cents or 20 per cent.

The following is a statement of the average monthly prices of lead during 1906 as published by the Engineering and Mining Journal of New York:—

Million Pounds

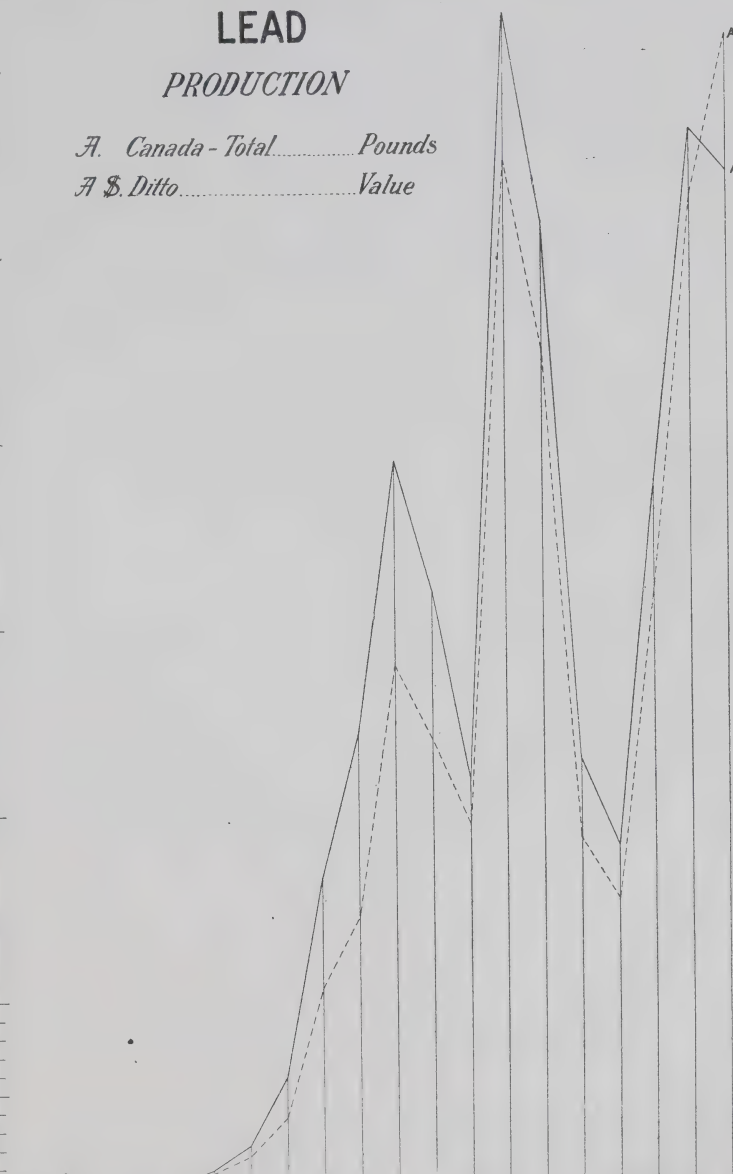
Table E

LEAD

PRODUCTION

A. Canada - Total.....Pounds
A \$. Ditto.....Value

Million Dollars



SESSIONAL PAPER No. 26b

MONTHLY AVERAGE PRICE OF LEAD DURING 1906 IN NEW YORK.

Month.	Cents per Pound.	Month.	Cents per Pound.
January.....	5·600	July.....	5·750
February....	5·464	August.....	5·750
March.....	5·350	September.....	5·750
April.....	5·404	October.....	5·750
May.....	5·685	November.....	5·750
June.....	5·750	December.....	5·900
		Average for the year....	5·657

The monthly average prices of soft lead in London, England—as published by Julius Matton of London, and Metallgesellschaft of Frankfurt—were, during 1906, as follows :—

MONTHLY AVERAGE PRICES OF SOFT LEAD DURING 1906 IN LONDON, ENG.

January.....	£16 17 6	July.....	£16 11 7
February.....	16 0 3	August.....	17 1 3
March.....	15 17 8	September.....	18 4 4
April.....	15 16 6	October.....	19 7 9
May.....	16 13 6	November.....	19 5 6
June.....	16 15 6	December.....	19 12 6
		Average for the year....	£17 7 0

Previous to 1904 lead ores mined in Canada were either exported or were reduced in Canadian furnaces to lead bullion carrying gold, silver, etc., which product was then exported for further treatment.

A lead refinery, however, is now being operated at Trail, B.C., by the Consolated Mining and Smelting Company of Canada, producing pig lead, lead pipe, sheet lead, etc., of exceptional purity. The production of refined lead by this firm has been as follows :—

Year.	Refined Lead produced.
1904.....	7,519,440 pounds
1905.....	15,804,509 "
1906.....	20,471,314 "

Thus in 1906 a little over 37 per cent of the output was refined in Canada, as compared with 27 per cent in 1905 and 20 per cent in 1904.

The Carter White Lead Co., of Canada, Ltd., manufacturers of white lead at Montreal, use Trail lead exclusively. Their plant is equipped for an immediate capacity of 7,000 tons per annum; but is designed for an ultimate capacity of 15,000 tons.

TABLE 1.

LEAD.

ANNUAL PRODUCTION.

Calendar Year.	Pounds.	Price per Pound.	Value.
		cts.	
1887.....	204,800	4 50	\$ 9,216
1888.....	674,500	4 42	29,812
1889.....	165,100	3 93	6,488
1890.....	105,000	4 48	4,704
1891.....	88,665	4 35	3,857
1892.....	808,420	4 09	33,064
1893.....	2,135,023	3 73	79,636
1894.....	5,703,222	3 29	187,636
1895.....	16,461,794	3 23	531,716
1896.....	24,199,977	2 98	721,159
1897.....	39,018,219	3 58	1,396,853
1898.....	31,915,319	3 78	1,206,399
1899.....	21,862,436	4 47	977,250
1900.....	63,169,821	4 37	2,760,521
1901.....	51,900,958	4 334	2,249,387
1902.....	22,956,381	4 069	934,095
1903.....	18,139,283	4 237	768,562
1904.....	37,531,244	4 309	1,617,221
1905.....	56,864,915	4 707	2,676,632
1906.....	54,608,217	5 657	3,089,187

EXPORTS AND IMPORTS:—According to Customs Department statistics exports of lead during 1906 were as follows:—

	Pounds.	Value.
Lead in ore, etc.	18,140,671	\$622,101
Pig Lead.....	3,295,351	113,906
Total.....	21,436,022	\$736,007

Lead in ore was exported chiefly to the United States, while the pig lead exported was shipped principally to Japan, China, and Australia.

Imports of lead in the shape of old, scrap, pig, block, bars, and sheets amounted to 4,941 tons; tea lead nearly 1,000 tons, manufactures of lead (quantity not stated) valued at \$75,619; litharge, which is about 92 per cent lead, 508 tons, and 5,206 tons of white and red lead, etc., or a total of a little over 11,500 tons; besides \$75,619 worth of manufactured lead products.

SESSIONAL PAPER No. 26b

TABLE 2.

LEAD.

EXPORTS.

Calendar Year.	Value.
1873	\$1,993
1874	127
1875	7,510
1876	66
1877	720
1878	
1879	230
1880	
1881	
1882	32
1883	5
1884	36
1885	
1886	
1887	724
1888	18
1889	
1890	
1891	5,000
1892	2,509
1893	3,099
1894	144,509
1895	435,071
1896	462,095
1897	925,144
1898	885,485
1899	466,950
1900	1,917,690
1901	1,804,687
1902	457,170
1903	426,466
1904	559,461
1905	1,046,541
1906	736,007

DEPARTMENT OF MINES

7-8 EDWARD VII., A. 1908

TABLE 3.

LEAD.

IMPORTS OF LEAD.

Fiscal Year.	OLD, SCRAP AND PIG.		BARS, BLOCKS, SHEETS.		TOTAL.	
	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.
1880					30,298	\$124,117
1881	16,236	\$ 56,919	18,222	\$70,744	34,458	127,663
1882	36,655	120,870	10,540	35,728	47,195	156,598
1883	48,780	148,759	8,591	28,785	57,371	177,544
1884	39,409	103,413	9,704	28,458	49,113	131,871
1885	36,106	87,038	9,362	24,396	45,468	111,434
1886	39,945	110,947	9,793	28,948	49,738	139,895
1887	61,160	173,477	14,153	41,746	75,313	215,223
1888	68,678	196,845	14,957	45,900	83,635	242,745
1889	74,223	213,132	14,173	43,482	88,396	256,614
1890	101,197	283,096	19,083	59,484	120,280	342,580
1891	86,382	243,033	15,646	48,220	102,028	291,253
1892	97,375	254,384	11,299	32,368	108,674	286,752
1893	94,485	215,521	12,403	32,286	106,888	247,807
1894	70,223	149,440	8,486	20,451	78,709	169,891
1895	67,261	139,290	6,739	16,315	74,000	155,605
1896	72,433	173,162	8,575	23,169	81,008	196,331
1897	65,279	158,381	10,516	29,175	75,795	187,556

	OLD, SCRAP, PIG AND BLOCK.*		BARS AND SHEETS.†		TOTAL.	
1898	88,420	\$260,779	22,214	\$39,041	110,634	\$299,820
1899	114,659	283,432	44,796	39,833	159,455	323,265
1900	62,361	207,819	15,493	53,506	77,854	251,325
1901	(a) 85,321	97,011	16,295	78,316	101,616	175,327
1902	(a) 122,279	104,672	18,596	49,261	140,875	153,933
1903	(a) 98,530	67,821	11,535	35,398	110,065	103,219
1904	(a) 94,602	121,165	14,102	39,644	108,704	160,809
1905	(a) 57,074	133,775	17,792	51,972	74,866	185,747
1906	82,729	271,105	16,106	57,185	98,835	328,290

* Duty 15 per cent.

† Duty 25 per cent.

(a) Includes Canadian lead ore sent to the United States for refining, imported at price of refining only.

TABLE 4.

LEAD.

IMPORTS OF LEAD MANUFACTURES.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$ 15,400	1893.....	\$ 33,783
1881.....	22,629	1894.....	29,361
1882.....	17,282	1895.....	38,015
1883.....	25,556	1896.....	50,722
1884.....	31,361	1897.....	60,735
1885.....	36,340	1898.....	63,179
1886.....	33,078	1899.....	91,497
1887.....	19,140	1900.....	194,736
1888.....	18,816	1901.....	107,260
1889.....	16,315	1902.....	120,020
1890.....	25,600	1903.....	134,151
1891.....	23,893	1904.....	129,093
1892.....	22,636	1905.....	147,177

	Duty.	Cwt.	
1906 { Lead Tea.....	Free.	19,050	\$ 79,886
" Pipe.....	35 p. c.	877	5,417
" Shot and bullets.....	35 "	728	2,871
Manufactures, N.E.S.....	30 "		75,619
Total.....			\$163,793

TABLE 5.

LEAD.

IMPORTS OF LITHARGE.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	3,041	\$14,334	1894.....	38,547	\$28,685
1881.....	6,126	22,129	1895.....	11,955	32,953
1882.....	4,900	16,651	1896.....	10,710	32,817
1883.....	1,532	6,173	1897.....	12,028	34,538
1884.....	5,235	18,132	1898.....	11,446	32,904
1885.....	4,990	16,156	1899.....	9,530	32,518
1886.....	4,928	16,003	1900.....	9,139	29,176
1887.....	6,397	21,865	1901.....	11,132	51,944
1888.....	7,010	23,808	1902.....	13,002	47,021
1889.....	8,089	31,082	1903.....	13,921	47,761
1890.....	9,453	31,401	1904.....	9,894	32,633
1891.....	7,979	27,613	1905.....	17,865	57,736
1892.....	10,384	34,343	1906... Duty free...	10,165	39,836
1893.....	7,685	24,401			

TABLE 6.

LEAD.

IMPORTS OF DRY WHITE AND RED LEAD AND ORANGE MINERAL.

	Fiscal Year.	Pounds.	Value.
a	1885.....	5,404,753	\$ 198,913
	1886.....	6,703,077	213,258
	1887.....	6,998,820	233,725
	1888.....	6,361,334	216,654
	1889.....	7,066,465	267,236
b	1890.....	10,859,672	381,959
	1891.....	8,560,615	337,407
	1892.....	10,288,766	351,686
	1893.....	10,865,183	364,680
	1894.....	10,958,170	353,053
	1895.....	8,780,052	282,353
	1896.....	11,711,496	367,569
	1897.....	10,310,463	347,539
	1898.....	12,682,808	448,659
	1899.....	14,507,945	514,842
	1900.....	14,679,920	634,492
	1901.....	10,241,601	461,368
	1902.....	15,584,164	603,582
	1903.....	19,208,786	758,371
	1904.....	16,925,585	662,098
	(c) 1905..... Duty 5 per cent.	17,376,588	638,381

	Duty.	Pounds.	Value.	
1906 {	White lead, dry.....	30 %	8,248,057	\$336,142
	" " ground in oil.....	35 %	270,920	12,533
	Red lead and orange mineral.....	5 %	1,893,914	68,769
Total. ....		.....	10,412,891	417,444

(a) Imports of dry white and red lead and orange mineral.

(b) Imports of dry white and red lead, orange mineral and zinc white.

(c) Imports of dry white and red lead.

SESSIONAL PAPER No. 26b

British Columbia :—Statistics of lead production in British Columbia, comprising the greater part of the output in Canada, are given separately in table 7, while the details by districts for the past four years are given in table 8. The largest production recorded for one year was in 1900, and the second largest in 1905. The production in 1906 was less than the production in 1905 by about 7·3 per cent.

TABLE 7.

LEAD.

BRITISH COLUMBIA :—PRODUCTION.

Calendar Year.	Pounds.	Price per Pound.	Value.
		cts.	
1887.....	204,800	4·50	\$ 9,216
1888.	674,500	4·42	29,813
1889.	165,100	3·93	6,488
1890.....	Nil.		
1891.....	is		
1892.....	808,420	4·09	33,064
1893.....	2,131,092	3·73	79,490
1894.....	5,703,222	3·29	187,636
1895.....	16,461,794	3·23	531,716
1896.....	24,199,977	2·98	721,159
1897.....	38,841,135	3·58	1,390,513
1898.....	31,693,559	3·78	1,198,017
1899.	21,862,436	4·47	977,250
1900.....	63,158,621	4·37	2,760,031
1901.....	51,582,906	4·334	2,235,603
1902.....	22,536,381	4·069	917,005
1903.....	18,089,283	4·237	766,443
1904.....	36,646,244	4·309	1,579,086
1905.....	56,580,703	4·707	2,663,254
1906.....	52,408,217	5·657	2,964,733

TABLE 8.

LEAD.

BRITISH COLUMBIA :—PRODUCTION BY DISTRICTS.

—	1903.	1904.	1905.	1906.
	Pounds.	Pounds.	Pounds.	Pounds.
Cassiar.....			5,500	
East Kootenay				
Fort Steele	717,479	21,071,236	48,248,828	44,487,481
Other districts.	951,296	401,022	149,584	167,691
West Kootenay.....	4,299,727	3,091,648	1,002,114	3,173,353
Ainsworth.....	1,072,542	976,570	1,368,388	1,034,553
Nelson	9,880,469	10,611,227	5,399,330	2,975,674
Slocan.....	1,144,239	485,520	339,883	469,000
Other districts.....	23,531	9,021	67,076	100,465
Yale.....	18,089,283	36,646,244	56,580,703	52,408,217

NICKEL.

The production of nickel from the ores of the Sudbury district in Ontario has made a very rapid growth during the past two years, the output in 1906 being over twice that of 1904. The ore is smelted at Copper Cliff and Victoria Mines to a matte carrying from 78 to 80 per cent of the combined metals, copper and nickel. The resulting matte is shipped to the United States and Great Britain for refining.

The quantity of nickel contained in the matte shipped during 1906 was 21,490,955 pounds, as compared with 18,876,315 pounds in 1905, or an increase of 2,614,640 pounds, or 13·851 per cent. The total amount of matte shipped was 20,310 tons, containing both nickel and copper, and was valued at the point of shipment at about \$4,628,011. The final value of the refined nickel in New York at an average of 41·64 cents per lb. would be \$8,948,834.

The following were the aggregate results of operations on the nickel-copper deposits of Ontario in 1906 :—

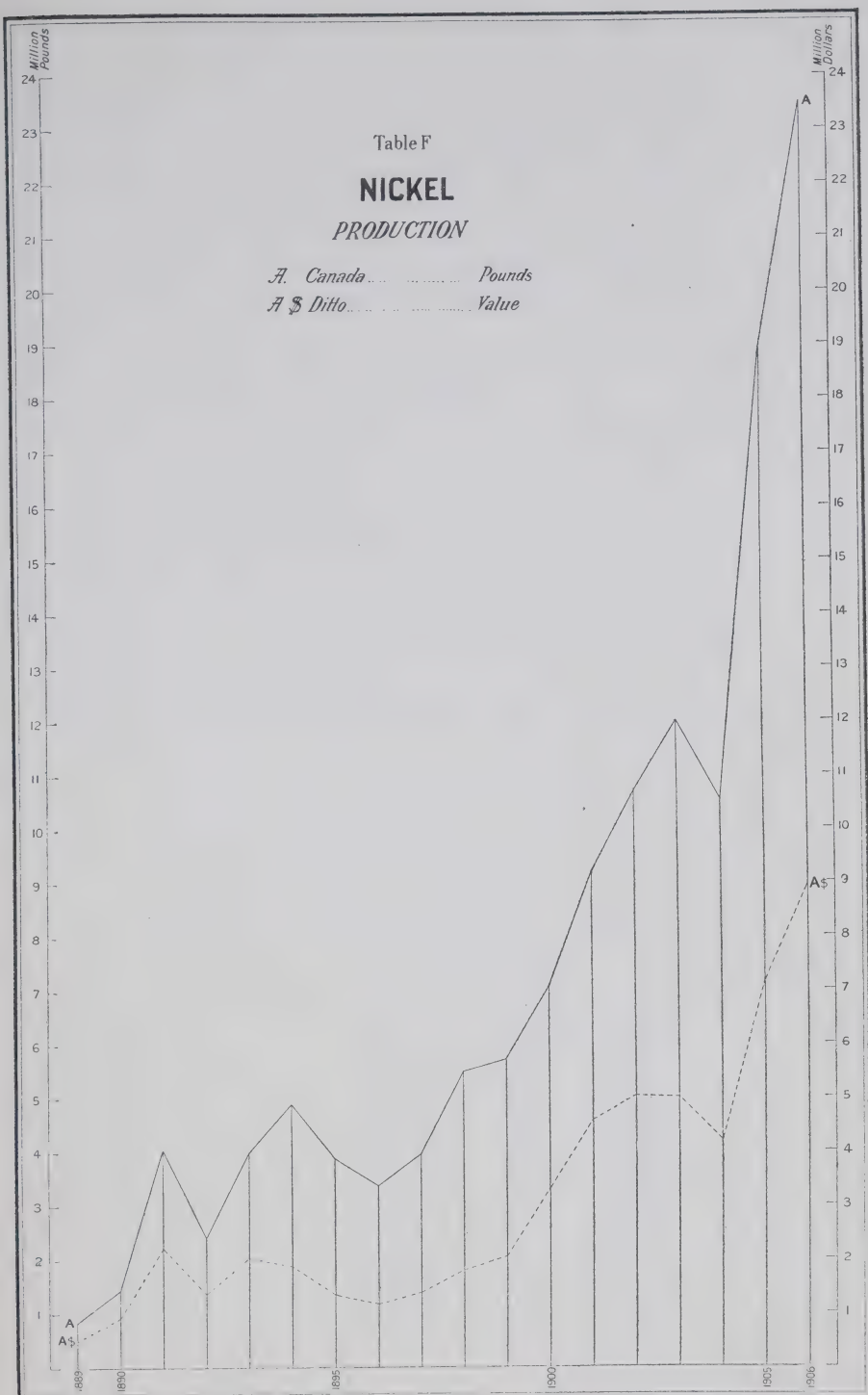
	Tons of 2,000 lbs.
Ore mined.....	343,814
Ore smelted.....	340,059
Matte produced.....	20,364
Matte shipped.....	20,310
Copper contents of matte shipped.....	5,264
Nickel contents of matte shipped.....	10,745
Spot value of matte shipped.....	\$4,628,011

According to customs returns, exports of nickel in matte, etc., were for twelve months ending December 31, as follows :—

	Pounds.
To Great Britain.....	2,716,892
To United States.....	17,936,953
	<hr/> 20,653,845

During 1905 the price of refined nickel remained fairly steady throughout the year; according to the "Engineering and Mining Journal" of New York, quotations for large lots, New York or other parallel delivery, were 40 to 47 cents per pound, according to size and condition of order. For small quantities prices ranged from 48 to 60 cents, also according to size of order and delivery.

In 1906 the price of refined nickel, according to the same monthly, remained fairly steady from January to September 8, quotations for



SESSIONAL PAPER No. 26b

large lots, New York delivery, being from 40 to 45 cents per pound. From September 1 to the end of the year quotations were from 45 to 50 cents per pound according to size and condition of order, while for small quantities prices were from 50 to 65 cents per pound.

Although nickel is one of the minor constituents of the rich silver ores of the Cobalt district, statistics of the quantities of this mineral contained in these ores have not been included in the accompanying tables.

The Ontario Bureau of Mines reports the quantity of nickel contained in ore shipped from Cobalt as follows :—

Year.	Tons of Nickel.
1904	14
1905	75
1906	160

The companies engaged in mining nickel ores are as follows :

The Canadian Copper Company (The International Nickel Co.) Copper Cliff, Ont., and New York.

The Mond Nickel Company, Victoria Mines, Ont., and London, Eng.

The Lake Superior Power Company, (The Lake Superior Corporation) Sault Ste Marie, Ont.

The latter Company did not operate their nickel mines during the year.

TABLE 1.

NICKEL.

ANNUAL PRODUCTION.

Calendar Year.	Pounds of Nickel in Matte.	Final Average Market Price per lb at New York.	Value.
1889	*830,477	60c.	\$ 498,286
1890	1,435,742	65c.	933,232
1891	4,035,347	60c.	2,421,208
1892	2,413,717	58c.	1,399,956
1893	3,982,982	52c.	2,071,151
1894	4,907,430	38½c.	1,870,958
1895	3,888,525	35c.	1,360,984
1896	3,397,113	35c.	1,188,990
1897	3,997,647	35c.	1,399,176
1898	5,517,690	33c.	1,820,838
1899	5,744,000	36c.	2,067,840
1900	7,080,227	47c.	3,327,707
1901	9,189,047	50c.	4,594,523
1902	10,693,410	47c.	5,025,903
1903	12,505,510	40c.	5,002,204
1904	10,547,883	40c.	4,219,153
1905	18,876,315	40c.	7,550,526
1906	21,490,955	41.64	8,948,834

Calculated from shipments made by rail.

26b--61½

TABLE 2.

NICKEL.

EXPORTS.*

Calendar year.	Value.	Calendar Year.	Value.
1890.	\$ 89,568	1899.	\$939,915
1891.	667,280	1900.	1,031,030
1892.	293,149	1901.	751,080
1893.	629,692	1902.	1,007,211
1894.	559,356	1903.	1,116,099
1895.	521,783	1904.	1,091,349
1896.	658,213	1905.	1,569,693
1897.	723,130	1906.	2,042,065
1898.	1,019,363		

*Practically all the nickel-bearing ore and matte produced in Canada is exported, the apparent discrepancy between tables Nos. 1 and 2 being due to the different basis of valuation adopted in the two instances. Table 1 represents the total final values of the nickel produced in Canada, for the years represented. In table 2 the worth of the product shipped is entered at its spot value to the operators, and depends upon the particular stage to which they happen to carry the process of extraction at the time, *e.g.*, whether the shipments made are raw ore, low grade matte or high grade matte, etc.

TABLE 3.

NICKEL.

IMPORTS.

Calendar Year.		Value.
1890		\$ 3,154
1891		3,889
1892		3,208
1893		2,905
1894		3,528
1895		4,267
1896		4,787
1897		4,737
1898		5,882
1899		9,449
1900		6,988
1901		12,029
1902		15,448
1903		26,177
1904		14,682
1905		19,076
		Duty.
1906	{ Nickel anodes	10 p. c.
	{ Nickel*	Free.
		\$ 15,976

*Classified under the general heading of minerals in the Trade and Navigation Report.

ZINC.

The zinc smelting plant erected at Frank, Alberta, by the Canadian Metal Company, Ltd., has not yet been put into commercial operation, and there is as yet no production of spelter in Canada.

Small amounts of zinc ore and concentrates were shipped both from Ontario and British Columbia, the total being 1,154 tons, valued at \$23,800.

The production in Ontario was derived from the Richardson mine in the township of Olden, Frontenac county.

For British Columbia the Provincial Mineralogist reports in the Minister of Mines report as follows :

"The production of zinc ore this past year was very small, only some 654 tons, and the industry has been practically at a stand still. In 1905, concentrating or "enriching" plants were erected for the production of concentrates that would assay about 50 per cent zinc, for which there was a market in the United States, into which country they were admitted free of duty as "crude mineral"; but in 1906 a decision of the United States Customs Department ruled that these concentrates were not "crude mineral" and, consequently, were subject to duty, which duty was so high as to be prohibitive, the result being a suspension of zinc mining in British Columbia. This decision has, however, been appealed from, and on February 7, 1907, the United States General Appraisers reversed the decision, deciding that these concentrates were "crude mineral" and, consequently, free from duty."

TABLE 1.

ZINC.

ANNUAL PRODUCTION OF ZINC.

Calendar Year.	Zinc Ore Shipped		Metallic Zinc in Ore Shipped.	
	Tons.	Spot Value.	Pounds.	Final Value.
1898.....	1,162	\$ 11,000	788,000	\$ 36,011
1899.....	865	18,165	814,000	46,805
1900.....	261	4,810	212,000	9,342
1901.....				
1902.....	158	1,659	142,200	6,882
1903.....	1,000	10,500	900,000	48,660
1904.....	597	3,700	477,568	24,356
1905.....	9,413	139,200	*	*
1906.....	1,154	23,800	*	*

*Figures not available.

7-8 EDWARD VII., A. 1908

TABLE 2.

ZINC.

IMPORTS OF ZINC IN BLOCKS, PIGS AND SHEETS.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	13,805	\$67,881	1894.....	20,774	\$90,680
1881.....	20,920	94,015	1895.....	15,061	63,373
1882.....	15,021	76,631	1896.....	20,223	80,784
1883.....	22,765	94,799	1897.....	11,946	57,754
1884.....	18,945	77,373	1898.....	35,148	112,785
1885.....	20,954	70,598	1899.....	18,785	107,477
1886.....	23,146	85,599	1900.....	28,748	156,167
1887.....	26,142	98,557	1901.....	20,527	103,457
1888.....	16,407	65,827	1902.....	34,871	141,560
1889.....	19,782	83,935	1903.....	26,646	142,827
1890.....	18,236	92,530	1904.....	25,553	138,067
1891.....	17,984	105,023	1905.....	25,141	141,514
1892.....	21,881	127,302	1906 Duty free	24,462	158,438
1893.....	26,446	124,360			

TABLE 3.

ZINC.

IMPORTS OF SPELTER.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	1,073	\$5,310	1894.....	8,423	\$35,615
1881.....	2,904	12,276	1895.....	9,249	30,245
1882.....	1,654	7,779	1896.....	10,897	40,548
1883.....	1,274	5,196	1897.....	8,342	32,826
1884.....	2,239	10,417	1898.....	2,794	13,561
1885.....	3,325	10,875	1899.....	5,450	29,687
1886.....	5,432	18,238	1900.....	5,836	29,416
1887.....	6,908	25,007	1901.....	14,621	58,283
1888.....	7,772	29,762	1902.....	18,356	80,757
1889.....	8,750	37,403	1903.....	23,159	110,817
1890.....	14,570	71,122	1904.....	33,952	164,751
1891.....	6,249	31,459	1905.....	37,941	206,244
1892.....	13,909	62,550	1906 Duty free	50,137	290,686
1893.....	10,721	49,822			

*Spelter in blocks and pigs.

SESSIONAL PAPER No. 26b

TABLE 4.

ZINC.

IMPORTS OF ZINC, MANUFACTURES OF.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$ 8,327	1893.....	7,464
1881.....	20,178	1894.....	6,193
1882.....	15,526	1895.....	5,581
1883.....	22,599	1896.....	6,290
1884.....	11,952	1897.....	5,145
1885.....	9,459	1898.....	10,503
1886.....	7,345	1899.....	14,661
1887.....	6,561	1900.....	11,475
1888.....	7,402	1901.....	6,882
1889.....	7,233	1902.....	6,683
1890.....	6,472	1903.....	9,754
1891.....	7,178	1904.....	12,682
1892.....	7,563	1905.....	11,912
1906 { Zinc seamless drawn tubing..... " manufactures of, N.O.P..... Total.....		Duty.	
		Free.	.....
		25 %	\$ 12,917
			\$ 12,917

MISCELLANEOUS METALLIC.

ALUMINIUM.

The Northern Aluminium Company have extensive works at Shawenegan Falls, Que., where they manufacture aluminium from ores imported from France and Germany. They have also a well equipped wire mill where the metal is made into aluminium wire and cables which are now used extensively in transmission of electricity. No Canadian raw material is used ; but it is interesting to mention the industry inasmuch as it may stimulate search and prospecting for ores of aluminium. The Northern Aluminium Company use bauxite imported from France and Germany.

ANTIMONY.

The mining of antimony ores in Canada has been exceedingly irregular, as previous to 1905 no production had been reported since 1898. In 1905 about 527 tons of ore were shipped from West Gore, Hants county, Nova Scotia, and in 1906 the shipments were 782 tons, yielding 1,031 ozs. 13 dwt. 11 grs. gold ; antimony contents not stated.

An important discovery of antimony ore was made in British Columbia and is referred to in the report of the Minister of Mines as follows :—

“The most notable discovery in the district (Slocan district) was that of a large body of stibnite in the Alps and Alturas claims, on the north fork of Carpenter creek. The ore shows in a well defined ledge four feet in width, running 65 p.c. antimony. The owners of the property, The Golden Crown Gold and Silver Mining Company, Louis Hind, M.E., manager, owing to the lateness of the season and the elevation of the mines, viz., 7,700 feet, were unable to do more than development work during the fall ; but sufficient progress was made to show that the ore body is a very extensive one. A car load of ore is now sacked on the dump and a large quantity of ore is blocked out ready for mining. The management has arranged for the construction of an aerial tramway 4,000 feet in length, and for the building of substantial quarters for a large force of men, that operations may be carried on continuously. The ore is to be sent to Scotland for treatment, and shipments will be made as soon as the tramway is installed.”

SESSIONAL PAPER No. 26b

TABLE 1.

MISCELLANEOUS.

METALLIC.

ANNUAL PRODUCTION OF ANTIMONY ORE.

Calendar Year.	Tons.	Value.
1886	665	\$31,490
1887	584	10,860
1888	345	3,696
1889	55	1,100
1890	26½	625
1891	10	60
1892 to 1897	Nil.	Nil.
1898	1,344	20,000
1899 to 1904	Nil.	Nil.
1905	527	.....
1906	782	.....

* Fiscal year ending September 30.

TABLE 2.

MISCELLANEOUS.

METALLIC.

EXPORTS OF ANTIMONY ORE.

Calendar Year	Tons.	Value.	Calendar Year	Tons.	Value.
1880	40	\$1,948	1891	3½	\$60
1881	34	3,308	1892 to 1897 ..	Nil.	Nil.
1882	323	11,673	1898	1,232	15,295
1883	165	4,200	1899	6¾	190
1884	483	17,875	1900	210	3,441
1885	758	36,250	1901	10	1,643
1886	665	31,490	1902	90	13,653
1887	229	9,720	1903	33	4,332
1888	352½	6,894	1904	160	7,237
1889	30	695	1905	525	27,118
1890	38	1,000	1906	420	17,064

TABLE 3.

MISCELLANEOUS.

METALLIC.

IMPORTS OF ANTIMONY.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	42,247	\$ 5,903	1893.....	181,823	\$14,771
1881.....		7,060	1894.....	139,571	12,249
1882.....	183,597	15,044	1895.....	79,707	6,131
1883.....	105,346	10,355	1896.....	163,209	9,557
1884.....	445,600	15,564	1897.....	134,661	8,031
1885.....	82,012	8,182	1898.....	156,451	12,350
1886.....	89,787	6,951	1899.....	289,066	16,851
1887.....	87,827	7,122	1900.....	186,997	20,001
1888.....	120,125	12,242	1901.....	350,737	24,714
1889.....	119,034	11,206	1902.....	504,822	39,276
1890.....	117,066	17,439	1903.....	868,146	65,434
1891.....	114,084	17,483	1904.....	418,943	27,112
1892.....	180,308	17,680	1905.....	186,454	12,828
1906 { Antimony, or regulus of, not ground, pulverized or otherwise manufactured. Antimony salts.....			Duty.		
			Free.	316,278	42,517
			"	87,640	13,780
Total....				403,918	56,297

MERCURY.

There has been no production of mercury since 1897. The small production reported in 1895, 1896 and 1897, was derived from the deposits at the western end of Kamloops lake, B.C. These deposits consist of quartz veins containing pockets of cinnabar. These veins are in a zone of decomposed volcanic rock of Tertiary age.

TABLE 4.

MISCELLANEOUS.

METALLIC.

PRODUCTION OF MERCURY.

Calendar Year.	Flasks (76½ lb.)	Price per flask.	Value.
1895.....	71	\$ 33 00	\$ 2,343
1896.....	58	33 44	1,940
1897.....	9	36 00	324

TABLE 5.
MISCELLANEOUS.
METALLIC.
IMPORTS OF MERCURY.

Fiscal Year.	Pounds.	Value.
1882.	2,443	\$ 965
1883.	7,410	2,991
1884.	5,848	2,441
1885.	14,490	4,781
1886.	13,316	7,142
1887.	18,409	10,618
1888.	27,951	14,943
1889.	22,931	11,844
1890.	15,912	7,677
1891.	29,775	20,223
1892.	30,936	15,038
1893.	50,711	22,998
1894.	36,914	14,483
1895.	63,732	25,703
1896.	77,869	32,343
1897.	76,058	33,534
1898.	59,759	36,425
1899.	103,017	51,695
1900.	85,342	51,987
1901.	140,610	94,564
1902.	97,283	56,615
1903.	164,968	91,625
1904.	151,107	80,658
1905.	103,330	48,412
1906. Duty free.	150,364	69,505

PLATINUM.

The chief source of the platinum production in Canada has been the placer gravels of British Columbia, principally in the Similkameen River district. The nickel-copper ores of the Sudbury district also carry small quantities of the metals of the platinum group, and these are now being partly recovered. During 1902, 1903, and 1904 considerable quantities of platinum were recovered from accumulated residues resulting from the treatment of the mattes from Sudbury.

In 1906 there was practically no production of platinum from placer deposits, while the amount of platinum metals recovered from the treatment of the nickel-copper mattes is reported by the Ontario Bureau of Mines to have been 314 ounces valued at \$5,652. This has been tabulated under palladium.

In British Columbia the Provincial Mineralogist reports that "Platinum continues to be found in small quantities in various parts of the Province, but as yet no systematic attempt has been made to save it. As already noted in previous reports, it is found in alluvial wash-

7-8 EDWARD VII., A. 1908

ings in the Similkameen district, on the Quesnel river in Cariboo, on Thibert creek in Cassiar, and also in the Yukon. The latest find was at Lillooet, from which district there was received a few ounces of the crude platinum sand, saved by a prospector in washing for gold, for which the Provincial Mineralogist was able to obtain some \$25 an ounce net cash."

TABLE 6.

MISCELLANEOUS.

METALLIC.

ANNUAL PRODUCTION OF PLATINUM.

Calendar Year.	Value.	Calendar Year.	Value.
1887.....	\$ 5,600	1897.....	\$ 1,600
1888.....	6,000	1898.....	1,500
1889.....	3,500	1899.....	825
1890.....	4,500	1900.....	Nil.
1891.....	10,000	1901.....	457
1892.....	3,500	1902.....	46,502
1893.....	1,800	1903.....	33,345
1894.....	950	1904.....	10,872
1895.....	3,800	1905.....	500
1896.....	750	1906.....	*

* See under Palladium.

TABLE 7.

MISCELLANEOUS.

METALLIC.

IMPORTS OF PLATINUM.

Fiscal Year.	Value.	Fiscal Year.	Value.
1883.....	\$ 113	1895.....	\$3,937
1884.....	576	1896.....	6,185
1885.....	792	1897.....	9,031
1886.....	1,154	1898.....	9,781
1887.....	1,422	1899.....	9,671
1888.....	13,475	1900.....	57,910
1889.....	3,167	1901.....	20,263
1890.....	5,215	1902.....	19,357
1891.....	4,055	1903.....	21,251
1892.....	1,952	1904.....	28,112
1893.....	14,082	1905.....	61,719
1894.....	7,151	1906 [*]	54,494

* Platinum wire and platinum in bars, strips, sheets or plates, platinum retorts, pans, condensers, tubing and pipe, imported by manufacturers of sulphuric acid for use in their works. Duty free.

PALLADIUM.

It has been known for a long time that palladium was present in the nickel ore of the Sudbury district, but in past years no definite information could be obtained as to whether the metals of the platinum group were saved in the treatment which the ores and mattes underwent. As far back as 1889 it was discovered that sperrylite, the arsenide of platinum, which is present in the Sudbury ores, contained traces of palladium, but the occurrence was noted as being only of mineralogical interest. Of late years, however, the sources of platinum have not been able to supply the demand, and palladium is being considered as a possible substitute on account of its malleability and high melting point (palladium 1500°C, platinum 1750°C).

The metal palladium, as well as platinum, as already explained, has been recovered from the residues resulting from the treatment of the nickel-copper ores of Sudbury, Ont., and statistics of production as obtained by the Ontario Bureau of Mines have been as follows:—

	Ounces.	Value.
1902 Palladium.	4,411	\$86,014
1903 "	3,177	61,952
1904 "	962	18,564
1905 Metals of the Platinum Group.	1,562	28,116
1906 " " "	314	5,652

TIN.

Tin ores have not yet been found in sufficient quantities in Canada to be of economic importance.

The occurrence of tin has been reported from several localities, the most important, perhaps, being the recent discovery of cassiterite near New Ross, Lunenburg county, Nova Scotia. This occurrence has not yet been found of economic value. It has been visited by several officers of the Geological Survey, and reports upon it may be found in the Summary Report of the Geological Survey Branch of the Department of Mines for 1907, pages 77 and 80 to 83.

The imports of tin and manufactures of, into Canada, are shown in the following table:—

TABLE 8.

MISCELLANEOUS.

METALLIC.

IMPORTS OF TIN AND TINWARE.

Fiscal Year.		Value.	Fiscal Year.		Value.
1880.....		\$ 281,880	1893.....		\$1,242,994
1881.....		413,924	1894.....		1,310,389
1882.....		790,285	1895.....		973,397
1883.....		1,274,150	1896.....		1,237,684
1884.....		1,018,493	1897.....		1,274,108
1885.....		1,060,883	1898.....		1,550,851
1886.....		1,117,368	1899.....		1,372,813
1887.....		1,187,312	1900.....		2,418,455
1888.....		1,164,273	1901.....		2,339,109
1889.....		1,243,794	1902.....		2,293,958
1890.....		1,289,756	1903.....		2,712,186
1891.....		1,206,918	1904.....		2,389,557
1892.....		1,594,205	1905.....		2,791,757
1906 { Tin crystals..... Tin in blocks, pigs and bars..... Tin plates and sheets..... Tin foil..... Tinware, plain, japanned, or lithographed, and all manufactures of tin, N.E.S.....			Duty.		
			Free.		\$ 2,634
			"		1,171,569
			"		1,869,000
			"		65,307
Total.....			25 %		228,438
					3,336,948

NON-METALLIC.

Abrasive Materials.

The abrasives produced in Canada comprise corundum, the various sandstone abrasives, such as grindstones, pulpstones, whetstones, etc., and tripolite or infusorial earth.

CORUNDUM.

The total shipments of grain corundum in 1906 from mills in Canada were 2,274 tons, valued at \$204,973, f. o. b. at railway shipping points. Compared with the shipments in 1905 there is an increase of 630 tons, or over 38 per cent.

Detailed statistics of output and sales for 1906 were as follows:—

Rock treated.....	45,719 tons.
Grain corundum graded.....	5,828,905 pounds.
Shipments:—	
Grain corundum sold in Canada.....	323,103 pounds.
Grain corundum sold in other countries.....	4,225,073 "
Total sales.....	4,548,176

Two companies were mining corundum rock and operating mills during the year. The Canada Corundum Company, Ltd., Toronto, the largest operator, worked the Craig mine at Craigmont, Renfrew county, and the Ashland Emery and Corundum Company operated their mine and mill at Burgess Mines, in the same district. Both companies worked throughout the year, employing about 232 men and paying in wages \$160,354.

Statistics of shipments since 1900 are as follows:—

	Quantity.	Value.
1900 grain corundum.....	3 tons.	\$ 300
1901 ".....	387 "	46,415
1902 ".....	768 "	84,465
1903 " 703 corundum ore 267 f.....	970 "	80,180
1904 grain corundum.....	993 "	109,545
1905 ".....	1644 "	149,153
1906 ".....	2274 "	204,973

Statistics since 1900 showing the quantities of ore treated, the corundum produced, and the sales or shipments, are given in the following table:—

TABLE 1.

ABRASIVE MATERIALS.

PRODUCTION OF CORUNDUM ORE AND CORUNDUM.

Calendar Year.	Corundum-bearing rock treated.	Grain Corundum Graded.	Grain Corundum sold in Canada.	Grain Corundum Exported.	Total of Grain Corundum
	Tons.	Tons.	Tons.	Tons.	Tons.
1900.....		60			3
1901.....	4,134	434	85	302	387
1902.....	7,996	805	106	662	768
1903.....	(a) 8,877	839	85	618	703
1904.....	28,187	1,654	116	877	993
1905.....	23,570	1,680	140	1,504	1,644
1906.....	45,719	2,914	162	2,112	2,274

(a) In addition to this amount which was milled in Canada, 267 tons of ore were mined and shipped to the United States for treatment there.

GRINDSTONES, PULPSTONES, ETC.

The production of grindstones has been carried on for many years in the Province of Nova Scotia. The output to-day is practically the same as it was about 20 years ago, there having been comparatively little variation from year to year. The total production, including wood-pulpstones, etc., in 1906, was 5,363 tons, valued at \$59,814.

These abrasives are quarried from the Millstone-grit of the Carboniferous formation, which occupies a large portion of the surface of the eastern half of the Province of New Brunswick, and the northern and north-western parts of Nova Scotia.

The grindstones are all shipped in a finished condition, and are worth from \$10 to \$12 per ton. About 20 pulpstones were made in 1906, which found a market in Canadian and United States pulp mills. Scythe or whetstones are manufactured by one firm. These are put up in one-quarter gross boxes, thirty pounds to the box, and are worth about \$50 per ton; about 300 gross were made in 1906. At some of the quarries there is a considerable production of foundation and building stone, besides rough stone for breakwater and harbour works.

Statistics of the production by provinces since 1886 are given in table 2 following :—

TABLE 2.

ABRASIVE MATERIALS.

ANNUAL PRODUCTION OF GRINDSTONES.

CALENDAR YEAR.	NOVA SCOTIA.		New BRUNSWICK.		TOTAL.		AVERAGE VALUE PER TON.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	
1886.....	1,765	\$24,050	2,255	\$22,495	4,020	\$46,545	\$11 58
1887.....	1,710	25,020	3,582	38,988	5,292	64,008	12 10
1888.....	1,971	20,400	3,793	30,729	5,764	51,129	8 87
1889.....	712	7,128	2,692	23,735	3,404	30,863	9 07
1890.....	850	8,536	4,034	33,804	4,884	42,340	8 67
1891.....	1,980	19,800	2,499	22,787	4,479	42,587	9 51
1892.....	2,462	27,610	2,821	23,577	5,283	51,187	9 69
1893.....	2,112	21,000	2,488	17,379	4,600	38,379	8 34
1894.....	2,128	16,000	1,629	16,717	3,757	32,717	8 71
1895.....	1,400	14,000	2,075	17,932	3,475	31,932	9 19
1896.....	1,450	14,500	2,263	18,810	3,713	33,310	8 97
1897.....	1,407	17,500	3,165	24,840	4,572	42,340	9 26
1898.....	1,422	12,350	3,513	32,425	4,935	44,775	9 07
1899.....	1,378	10,300	3,133	32,965	4,511	43,265	9 59
1900.....	1,411	12,600	4,128	40,850	5,539	53,450	9 65
1901.....	358	3,200	4,223	42,490	4,581	45,690	9 97
1902.....	1,074	8,118	3,559	36,000	4,633	44,118	9 52
1903.....	1,337	9,562	4,201	38,740	5,538	48,302	8 72
1904.....	1,029	7,332	3,620	35,450	4,649	42,782	9 20
1905.....	1,020	10,200	4,520	52,175	5,540	62,375	11 25
1906.....	1,023	9,680	4,340	50,134	5,363	59,814	11 15

The imports of grindstones into Canada, principally into the Provinces of Ontario and Quebec, reached a total in 1906 of \$59,627, made up of grindstone not mounted and not less than three feet in diameter to the value of \$48,683, and other grindstones to the value of \$10,944.

Statistics of the exports of grindstones and of the imports of grindstones, burrstones, emery and pumice stone are shown in tables 3, 4, 5, 6, and 7 following.

TABLE 3.

ABRASIVE MATERIALS.

EXPORTS OF GRINDSTONES.

Calendar Year.	Value.
1884.....	\$28,186
1885.....	22,606
1886.....	24,185
1887.....	28,769
1888.....	28,176
1889.....	29,982
1890.....	18,564
1891.....	28,433
1892.....	23,567
1893.....	21,672
1894.....	12,579
1895.....	16,723
1896.....	19,139
1897.....	18,807
1898*.....	25,588
1899*.....	23,288
1900*.....	42,128
1901*.....	29,130
1902*.....	24,489
1903*.....	27,659
1904*.....	35,612
1905*.....	24,868
1906*.....	31,978

* Including stone for the manufacture of grindstones.

SESSIONAL PAPER No. 26b

TABLE 4.
ABRASIVE MATERIAL.
IMPORTS OF GRINDSTONE.

Fiscal Year.	Duty.	Tons.	Value.
1880.....		1,044	\$11,714
1881.....		1,359	16,895
1882.....		2,098	30,654
1883.....		2,108	31,456
1884.....		2,074	30,471
1885.....		1,148	16,065
1886.....		964	12,803
1887.....		1,309	14,815
1888.....		1,721	18,263
1889.....		2,116	25,564
1890.....		1,567	20,549
1891.....		1,381	16,991
1892.....		1,484	19,761
1893.....		1,682	20,987
1894.....		1,918	24,426
1895.....		1,770	22,834
1896.....		1,862	26,561
1897.....		1,521	25,547
1898.....			22,217
1899.....			27,476
1900.....			34,382
1901.....			34,068
1902.....			40,838
1903.....			53,388
1904.....			46,039
1905.....			49,747
1906 {	Grindstones not mounted and not less than 36 inches in diameter....	15 p. c.	48,683
	Grindstones N.E.S.....	25 p. c.	10,944
			59,627

TABLE 5.
ABRASIVE MATERIAL.
IMPORTS OF BURRSTONES.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$12,049	1893.....	\$ 3,552
1881.....	6,337	1894.....	3,029
1882.....	15,143	1895.....	2,172
1883.....	13,242	1896.....	2,049
1884.....	5,365	1897.....	1,827
1885.....	4,517	1898.....	1,813
1886.....	4,062	1899.....	1,759
1887.....	3,545	1900.....	1,546
1888.....	4,753	1901.....	5,762
1889.....	5,465	1902.....	2,559
1890.....	2,506	1903.....	586
1891.....	2,089	1904.....	35
1892.....	1,464	1905.....	2,607
		1906*.....	2,661

* Burrstones in blocks, rough or unmanufactured, not bound up or prepared by binding into mill-stones. Duty free.

TABLE 6.
 ABRASIVE MATERIALS.
 IMPORTS OF EMERY.

Fiscal Year.	Emery. <i>a.</i>	Mfrs. of Emery. <i>b.</i>
1885.....	\$ 5,066	\$ 4,920
1886.....	11,877	5,832
1887.....	12,023	4,598
1888.....	15,674	4,001
1889.....	13,565	3,948
1890.....	16,922	5,313
1891.....	16,179	6,665
1892.....	17,782	6,492
1893.....	17,762	5,606
1894.....	14,433	2,223
1895.....	14,569	7,775
1896.....	16,287	11,913
1897.....	16,318	11,231
1898.....	17,661	15,478
1899.....	21,454	22,343
1900.....	19,312	25,615
1901.....	16,311	22,190
1902.....	14,476	23,892
1903.....	18,058	22,177
1904.....	21,626	29,273
1905.....	21,980	33,250
1906.....	21,781	42,080

a Emery in bulk, crushed or ground. Duty free.

b Emery wheels and manufactures of emery. Duty 25 p.c.

TABLE 7.
 ABRASIVE MATERIAL.
 IMPORTS OF PUMICE STONE.

Fiscal Year.	Value.
1885.....	\$ 9,384
1886.....	2,777
1887.....	3,594
1888.....	2,890
1889.....	3,232
1890.....	3,003
1891.....	3,696
1892.....	3,282
1893.....	3,798
1894.....	4,160
1895.....	3,609
1896.....	3,721
1897.....	2,903
1898.....	3,829
1899.....	5,973
1900.....	5,604
1901.....	5,516
1902.....	7,254
1903.....	6,152
1904.....	6,537
1905.....	8,447
*1906.....	9,053

* Pumice and pumice stone, ground or unground. Duty free.

TRIPOLITE.

There were practically no shipments of tripolite from Canadian deposits during 1906. Statistics of production of past years are shown in the following table.

TABLE 8.

ABRASIVE MATERIAL.

PRODUCTION OF TRIPOLITE.

Calendar Year..	Tons.	Value.
		\$
1896	644	9,960
1897	15	150
1898	1,017	16,660
1899	1,000	15,000
1900	336	1,950
1901	850	15,300
1902	1,052	16,470
1903	835	16,700
1904	320	6,400
1905	200	3,600
1906	nil	nil

ASBESTOS.

Returns from about twelve producing asbestos mines in 1906 showed a total production of asbestos and asbestic of 82,185 tons, valued at \$2,060, 143, made up as follows :—

—	Tons.	Value.	Average value per ton.
Crude Asbestos.....	3,841	\$ 635,345	\$16.54
Mill Stock.....	56,920	1,401,083	24.61
Total Asbestos.....	60,761	2,036,428	33.52
Asbestic, etc.	21,424	23,715	1.10
Total.....	82,185	2,060,143	25.06

Compared with 1905 an increase in total tonnage is shown of 13,922 or 20·3 per cent, while the increase in value was \$556,884 or 37 per cent. Statistics of production for several years past, as given in table 1, show the industry to be rapidly growing in volume.

Prices have been well maintained. In 1906 the range was about as follows :—

Crude No. 1.....	from \$175 to \$250 per ton.
Crude No. 2.....	" 110 to 150 "
Mill Stock.....	" 8 to 80 "
Asbestic.....	" 1 to 5 "
Asbestic Sand.....	50 cents per ton.

The crude stock and fibre are exported chiefly to the United States ; but also to Great Britain, Germany and other countries. The exports during the calendar year 1906 totaled 59,854 tons valued at \$1,689,257, as follows :—

	Tons.	Value.
To Great Britain	9,435	\$ 318,313
To United States.....	39,767	1,058,513
To Germany	3,654	82,117
To other countries..	6,998	230,314
Total.....	59,854	\$1689,257

The imports of asbestos during the fiscal year were valued at \$137,974, as compared with \$116,836 in 1905.

During the year the Shawenegan Water Power Company built a power line to Thetford, and is now supplying electric power to the mines. Another important development during the year is the beginning of underground work by the Bell Asbestos Mines, and the American Asbestos Company. Hitherto all the working has been by open quarry.

Statistics of production, exports, and imports are given in the following tables :—

SESSIONAL PAPER No. 26b

TABLE 1.
ASBESTOS.
PRODUCTION.—1896 to 1906.

	Tons.	Value.	Average Value per ton.
1896—Asbestos	10,892	\$ 423,066	\$ 38.84
Asbestic	1,358	6,790	5.00
	12,250	\$ 429,856	\$ 35.09
1897—Asbestos	13,202	\$ 399,528	\$ 30.26
Asbestic	17,240	45,840	2.66
	30,442	\$ 445,368	\$ 14.63
1898—Asbestos	16,124	\$ 475,131	\$ 29.46
Asbestic	7,661	16,066	2.10
	23,785	\$ 491,197	\$ 20.65
1899—Asbestos	17,790	\$ 468,635	\$ 26.34
Asbestic	7,746	17,214	2.22
	25,536	\$ 485,849	\$ 19.03
1900—Asbestos	21,621	\$ 729,886	\$ 33.76
Asbestic	7,520	18,545	2.46
	29,141	\$ 748,431	\$ 25.68
1901—Asbestos	32,892	\$ 1,248,645	\$ 37.96
Asbestic	7,325	11,114	1.52
	40,217	\$ 1,259,759	\$ 31.32
1902—Asbestos	30,219	\$ 1,126,688	\$ 37.28
Asbestic	10,197	21,631	2.12
	40,416	\$ 1,148,319	\$ 28.41
1903—Asbestos	31,129	\$ 915,888	\$ 29.42
Asbestic	10,548	13,869	1.31
	41,677	929,757	\$ 22.31
1904—Asbestos	35,611	\$ 1,213,502	\$ 34.07
Asbestic	12,854	12,850	1.00
	48,465	\$ 1,226,352	\$ 25.30
1905—Asbestos	50,669	\$ 1,486,359	\$ 29.33
Asbestic	17,594	16,900	.96
	68,263	\$ 1,503,259	\$ 22.02
1906—Asbestos	60,761	\$ 2,036,428	33.52
Asbestic	21,424	23,715	1.11
	82,185	2,060,143	25.07

DEPARTMENT OF MINES

7-8 EDWARD VII., A. 1908

TABLE 2.

ASBESTOS.

PRODUCTION, ETC.—1880 TO 1895.

Calendar Year.	PRODUCTION.			Exports Average value per ton.
	Tons 2,000 Pounds.	Value.	Average Value per ton.	
		\$	\$ c.	\$ c.
1880.....	380	24,700	65.00	Exports taken as production.
1881.....	540	35,100	65.00	
1882.....	810	52,650	65.00	
1883.....	955	68,750	71.98	
1884.....	1,141	75,097	65.80	
1885.....	2,440	142,441	58.37	
1886.....	3,458	206,251	59.64	
1887.....	4,619	226,976	49.14	
1888.....	4,404	255,007	57.90	
1889.....	6,113	426,554	69.77	
1890.....	9,860	1,260,240	127.81	63.25
1891.....	9,279	999,878	107.75	70.56
1892.....	6,082	390,462	64.19	70.56
1893.....	6,331	310,156	49.02	64.44
1894.....	7,630	420,825	55.15	75.52
1895.....	8,756	368,175	42.05	70.07
				69.35
				57.24
				59.82
				56.66
				47.96
				30.40
				32.19
				26.46
				39.61
				33.16
				32.02
				28.04
				31.14
				29.47
				28.22

TABLE 3.

ASBESTOS.

EXPORTS.

Calendar Year.	Tons.	Value.	Average value per ton.
1892.....	5,380	\$373,103	\$69.35
1893.....	5,917	338,707	57.24
1894.....	7,987	477,837	59.82
1895.....	7,442	421,690	56.66
1896.....	11,842	567,967	47.96
1897.....	15,570	473,274	30.40
1898.....	15,346	494,012	32.19
1899.....	17,883	473,148	26.46
1900.....	16,993	693,105	39.61
1901.....	32,269	1,069,918	33.16
1902.....	31,074	995,071	32.02
1903.....	31,780	891,033	28.04
1904.....	37,272	1,160,887	31.14
1905.....	47,031	1,386,115	29.47
1906.....	59,854	1,689,257	28.22

SESSIONAL PAPER No. 26b

TABLE 4.

ASBESTOS.

IMPORTS.

Fiscal Year.	Value.	Fiscal Year.	Value.
1885.....	\$ 674	1896.....	\$ 23,900
1886.....	6,831	1897.....	19,032
1887.....	7,836	1898.....	26,389
1888.....	8,793	1899.....	32,607
1889.....	9,943	1900.....	43,455
1890.....	13,250	1901.....	50,829
1891.....	13,298	1902.....	52,464
1892.....	14,090	1903.....	75,465
1893.....	19,181	1904.....	83,827
1894.....	20,021	1905.....	116,836
1895.....	26,094	*1906.....	137,974

*Asbestos in any form other than crude, and all manufactures of. Duty 25 p.c.

CHROMITE.

Within the past few years considerable improvements have been made in the methods of mining and treatment of the chromite ores of the Eastern townships, Province of Quebec. The total shipments in 1906 were 9,035 tons valued at \$91,859, as compared with 8,575 tons valued at \$93,301 in 1905; and shipments of 6,074 tons and 3,509 tons in 1904 and 1903 respectively.

The shipments in 1906 consisted of 4,060 tons of low grade product valued at \$34,375, or an average of \$8.46 per ton, and of 4,975 tons of high grade, chiefly concentrates, valued at \$57,484 or an average of \$11.55 per ton.

The prices realized were somewhat lower than those obtained in 1905.

The Canadian product is shipped to the United States and Europe, and is used in Canada in the manufacture of ferro-chrome at Buckingham, Que.

One of the largest producers reports that the unusual demand for iron and steel products has made a very satisfactory market for chrome ores of low grades suitable for furnace linings. The installation of modern mining and milling methods has enabled miners at Black Lake to meet the competition of New Caledonian and Turkish chrome ores in a fairly successful manner. A market in Canada is also opening up at Sydney, N.S., for the open-hearth furnaces there, and also at Buckingham where the Electric Reduction Company has again started the manufacture of ferro chrome.

The methods of mining and concentrating the ore were described in the last report of this Section as follows :—

“The ore is sorted as it comes from the pit, and all running over 40 p.c. sesquioxide of chromium is graded crude No. 1 (over 47 p.c.) and No. 2 (between 40 p.c. and 47 p.c.). The waste or ore running less than 40 p.c. Cr_2O_3 is sent to the mills for concentration. Here it is crushed in jaw crushers and under stamps, and concentrated in Wilfey tables. Two grades of concentrates are produced and are finding a ready mar-

SESSIONAL PAPER No. 26b

ket chiefly in the United States. The high grade concentrates running 50 to 54 p.c. C_2O_3 are competing successfully with the high grade ores of New Caledonia."

The Black Lake Chrome and Asbestos Company operated throughout the year with a force of 85 men. This Company has a 30 stamp mill for concentrating its low grade ore, a tramway operated by cable connecting the shafts with the mill, and an air compressor at the pit, the whole plant being operated by electric power obtained from the St. Francis Hydraulic Company. This Company has also obtained control of the properties of the Montreal Chrome Iron Company.

The Canadian Chrome Co., Ltd., has completed the installations of concentrating works consisting of a 20 stamp mill and five Wilfley tables. Other companies owning properties in the district confined their attention to prospecting and development work.

The following list of companies comprises those chiefly interested in the Canadian chrome mining industry:—

The Black Lake Chrome and Asbestos Company, 86 Notre Dame St., Montreal, Que.

The Coleraine Chrome Co., W. H. Lambly, Inverness, Que.

The Canadian Chrome Co., Ltd., Thetford Mines, Que.

The American Chrome Co., Black Lake, Que.

The Star Chrome Co., 570 St. Denis St., Montreal, Que.

King Bros., Thetford Mines, Que.

Uses and Markets : The principal uses of chrome ore are for the manufacture of chromium salts and ferro-chrome alloys, and as a lining in open-hearth steel furnaces.

Prices in New York in 1906 ranged from \$17.25 to \$19.75 per long ton for 50 p.c. ore. The chief consumers in the United States are, as published in the Mineral Industry, New York—

The Kalion Chemical Company, Philadelphia, Pa.

The Baltimore Chrome Works, Baltimore, Md.

The Harbison-Walker Refractories Company, Pittsburg, Pa.

DEPARTMENT OF MINES

7-8 EDWARD VII., A. 1908

TABLE 1.
CHROMITE.
ANNUAL PRODUCTION.

Calendar Year.	Tons. 2,000 lbs.	Average price per ton.	Value.
		\$ cts	\$
1886.....	* 60	15 75	945
1887.....	38	15 00	570
1888 to 1893.....	Pas d. pro.		
1894.....	1,000	20 00	20,000
1895.....	3,177	13 00	41,300
1896.....	2,342	11 53	27,004
1897.....	2,637	12 31	32,474
1898.....	*2,021	12 00	24,252
1899.....	2,010	10 86	21,842
1900.....	2,335	11 56	27,000
1901.....	1,274	13 14	16,744
1902.....	900	14 44	13,000
1903.....	3,509	14 57	51,129
1904.....	6,074	11 05	67,143
1905.....	8,575	10 88	93,301
1906.....	9,035	10 17	91,859

* Railway shipments.

TABLE 2.
CHROMITE.
EXPORTS.

Calendar Year.	Tons.	Value.
1895.....	2,908	\$ 42,236
1896.....	2,466	31,411
1897.....	2,106	26,254
1898.....	1,683	20,783
1899.....	1,509	19,876
1900.....	368	8,259
1901.....	2,259	25,444
1902.....	740	7,535
1903.....	1,013	20,524
1904.....	3,338	60,336
1905.....	5,042	45,072
1906.....	891	10,188

COAL.

From the point of view of value, coal is the most important of Canada's mineral productions, constituting as it does over 24 p. c. of the total mineral output.

The total sales and shipments of coal in 1906 from mines throughout Canada were 9,762,601 short tons (8,716,608 long tons) valued at \$19,732,019, compared with 8,667,948 short tons (7,739,239 long tons), valued at \$17,520,263 in 1905. The increase of production was, therefore, 1,094,653 short tons or 12.6 p. c. and in value \$2,211,756 or 12.6 p. c., the average price per ton being practically the same in both years.

Only one anthracite mine is worked in Canada, the Bankhead Mines Ltd., at Banff, Alberta, and with this exception all of the coal mined is of the bituminous or lignite variety. Detailed statistics of production are given in tables 1, 2, and 3 following :—

TABLE 1.

COAL.

PRODUCTION BY PROVINCES, 1904, 1905 and 1906.

Province.	1904.		1905.		1906.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
Nova Scotia ...	5,596,241	9,993,288	5,646,583	10,083,184	6,220,505	11,108,044
British Columbia	1,862,625	4,989,174	1,945,452	5,211,030	2,146,262	5,748,915
North West Territories including Yukon..	786,617	1,591,545	1,046,513	2,167,249	1,361,758	2,806,908
New Brunswick	9,112	18,224	29,400	58,800	34,076	68,152
Total	8,254,595	16,592,231	8,667,948	17,520,263	9,762,601	19,732,019

TABLE 2.
PRODUCTION.—COMPARISON OF 1905 AND 1906.

Province	INCREASE OR DECREASE.			
	Tons.	Per Cent.	Value.	Per Cent.
			\$	
Nova Scotia.....	<i>i</i> 573,922	10·16	<i>i</i> 1,024,860	10·16
British Columbia.....	<i>i</i> 200,810	10·32	<i>i</i> 537,885	10·32
North West Territories and Yukon.....	<i>i</i> 315,245	30·12	<i>i</i> 639,659	29·51
New Brunswick.....	<i>i</i> 4,676	15·90	<i>i</i> 9,352	15·90
Dominion.....	<i>i</i> 1,094,653	12·63	<i>i</i> 2,211,756	12·62

N.B. *i* Increase. *d* Decrease.

TABLE 3.

COAL.

ANNUAL PRODUCTION SHOWING THE INCREASE OR DECREASE EACH YEAR.

Calendar Year.	Tons.	Value.	Average Value per Ton.	Increase (<i>i</i>) or Decrease (<i>d</i>) in Tonnage.	Incr. (<i>i</i>) or Decr. (<i>d</i>) per cent.
1886.....	2,116,653	\$3,739,840	\$1 77	.....	.....
1887.....	2,429,330	4,388,206	1 81	<i>i</i> 312,677	<i>i</i> 14·8
1888.....	2,602,552	4,674,140	1 80	<i>i</i> 173,222	<i>i</i> 7·1
1889.....	2,658,303	4,894,287	1 84	<i>i</i> 55,751	<i>i</i> 2·1
1890.....	3,084,682	5,676,247	1 84	<i>i</i> 426,379	<i>i</i> 16·0
1891.....	3,577,749	7,019,425	1 96	<i>i</i> 493,067	<i>i</i> 16·0
1892.....	3,287,745	6,363,757	1 94	<i>d</i> 290,004	<i>d</i> 8·1
1893.....	3,783,499	7,359,080	1 95	<i>i</i> 495,754	<i>i</i> 15·1
1894.....	3,847,070	7,429,468	1 93	<i>i</i> 63,571	<i>i</i> 1·7
1895.....	3,478,344	6,739,153	1 94	<i>d</i> 368,726	<i>d</i> 9·6
1896.....	3,745,716	7,226,462	1 93	<i>i</i> 267,372	<i>i</i> 7·7
1897.....	3,786,107	7,303,597	1 93	<i>i</i> 40,391	<i>i</i> 1·1
1898.....	4,173,108	8,224,288	1 97	<i>i</i> 387,001	<i>i</i> 10·2
1899.....	4,925,051	10,283,497	2 09	<i>i</i> 751,943	<i>i</i> 18·0
1900.....	5,777,319	13,742,178	2 38	<i>i</i> 852,268	<i>i</i> 17·3
1901.....	6,486,325	12,699,243	1 96	<i>i</i> 709,006	<i>i</i> 12·3
1902.....	7,466,681	15,210,877	2 04	<i>i</i> 780,356	<i>i</i> 15·1
1903.....	7,960,364	15,928,843	2 00	<i>i</i> 493,683	<i>i</i> 6·6
1904.....	8,254,595	16,592,231	2 01	<i>i</i> 294,231	<i>i</i> 3·7
1905.....	8,667,948	17,520,263	2 02	<i>i</i> 413,353	<i>i</i> 5·0
1906.....	9,762,601	19,732,019	2 02	<i>i</i> 1,094,653	<i>i</i> 12·6

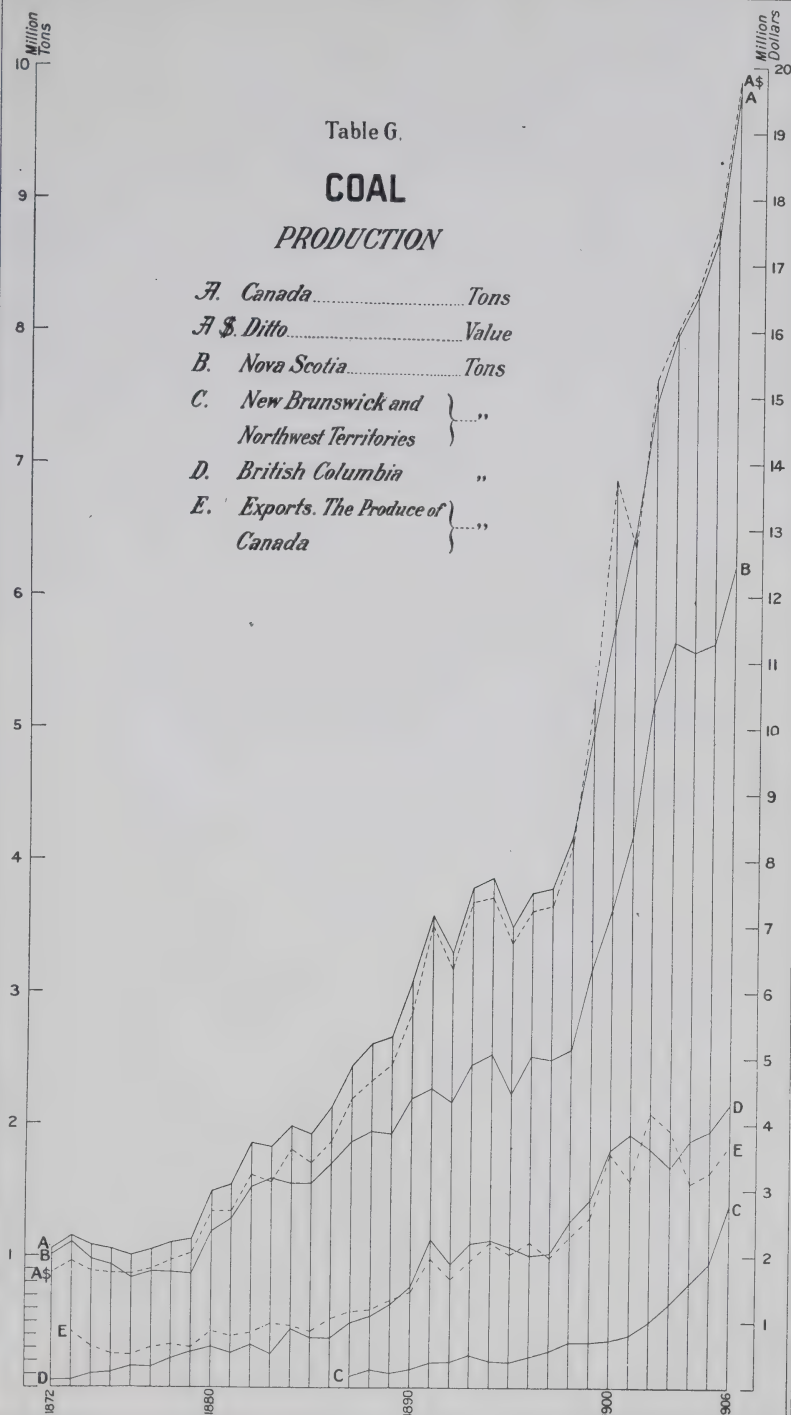
Of the total production in 1906 Nova Scotia and New Brunswick contributed about 64 p. c.; Saskatchewan, Alberta and Yukon 13·9 p. c., and British Columbia 21·9 p. c. The following short table illustrates the relative importance of the various provinces as producers of coal at various periods since 1874:—

Table G.

COAL

PRODUCTION

<i>A.</i>	<i>Canada</i>	<i>Tons</i>
<i>A \$</i>	<i>Ditto</i>	<i>Value</i>
<i>B.</i>	<i>Nova Scotia</i>	<i>Tons</i>
<i>C.</i>	<i>New Brunswick and</i>	}
	<i>Northwest Territories</i>	
<i>D.</i>	<i>British Columbia</i>	"
<i>E.</i>	<i>Exports. The Produce of</i>	}
	<i>Canada</i>	



SESSIONAL PAPER No. 26b

Province.	1874	1880	1890	1898	1899	1900	1901	1902	1903	1904	1905	1906
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
Nova Scotia New Brunswick Saskatchewan, Alberta and Yukon... B. Columbia..	91	79	71	61·6	64·2	62·9	64·4	69·4	71·3	68·0	65·5	64·07
	8	20	4	8·3	6·8	6·1	6·0	6·4	7·7	9·5	12·1	13·95
	.....	.....	25	30·3	29·0	31·0	29·6	24·2	21·0	22·5	22·4	21·98

In each province or district, as shown in table 2, a larger production was obtained in 1906 than in 1905, the largest proportional increase being in Alberta and Saskatchewan, which had an increased output of over 30 p. c. In Nova Scotia the increase was a little over 10 p. c.; in New Brunswick, where the total production was only 34,076 tons, the increase was nearly 16 p. c.; while in British Columbia an increase of over 10 p. c. is shown.

The total quantity of Canadian coal exported in 1906 was 1,835,041 tons, nearly 200,000 tons more than was exported in 1905. This coal is exported from both the eastern and western provinces, and chiefly to the adjacent states of the United States.

The imports of coal into Canada during the fiscal year ending June 30, comprising bituminous, anthracite and coal dust, reached a total of 7,443,664 tons, which is imported chiefly from the states of Pennsylvania and Ohio to the Provinces of Ontario and Quebec.

Statistics of exports and imports since 1880, shown in tables 4 to 8, have been compiled from the Trade and Navigation Reports published by the Department of Customs.

TABLE 4.
COAL.
EXPORTS.

CALENDAR YEAR.	PRODUCE OF CANADA.	NOT THE PRODUCE OF CANADA.	CALENDAR YEAR.	PRODUCE OF CANADA.	NOT THE PRODUCE OF CANADA.
	Tons.	Tons.		Tons.	Tons.
1873.....	420,683	5,403	1890.....	724,486	82,534
1874.....	310,988	12,859	1891.....	971,259	77,827
1875.....	250,348	14,026	1892.....	823,733	93,988
1876.....	248,638	4,995	1893.....	960,312	102,827
1877.....	301,317	4,829	1894.....	1,103,694	89,786
1878.....	327,959	5,468	1895.....	1,011,235	96,836
1879.....	306,648	8,468	1896.....	1,106,661	116,774
1880.....	432,188	14,217	1897.....	986,130	101,848
1881.....	395,382	14,245	1898.....	1,150,029	99,189
1882.....	412,692	37,576	1899.....	1,293,169	101,004
1883.....	456,811	44,388	1900.....	1,787,777	62,776
1884.....	474,405	62,665	1901.....	1,573,661	53,894
1885.....	427,937	71,003	1902.....	2,090,268	23,453
1886.....	520,703	78,443	1903.....	1,954,629	27,133
1887.....	580,965	89,098	1904.....	1,557,412	27,308
1888.....	588,627	84,316	1905.....	1,635,287	86,792
1889.....	665,315	89,294	1906.....	1,835,041	44,758

TABLE 5.

COAL.

EXPORTS.—NOVA SCOTIA AND BRITISH COLUMBIA.

Calendar Year.	NOVA SCOTIA.		*BRITISH COLUMBIA.	
	Tons.	Value.	Tons.	Value.
1874.....	252,124	\$647,539	51,001	\$ 278,180
1875.....	179,626	404,351	65,842	356,018
1876.....	126,520	263,543	116,910	627,754
1877.....	173,389	352,453	118,252	590,263
1878.....	154,114	293,795	165,734	698,870
1879.....	113,742	203,407	186,094	608,845
1880.....	199,552	344,148	219,878	775,008
1881.....	193,081	311,721	187,791	622,965
1882.....	216,954	390,121	179,552	628,437
1883.....	192,795	336,088	271,214	946,271
1884.....	222,709	430,330	245,478	901,440
1885.....	176,287	349,650	250,191	1,000,764
1886.....	240,459	441,693	274,466	960,649
1887.....	207,941	390,738	356,657	1,262,552
1888.....	165,863	330,115	405,071	1,605,650
1889.....	186,608	396,830	470,683	1,918,263
1890.....	202,387	426,070	508,882	1,977,191
1891.....	194,867	417,816	767,734	2,958,695
1892.....	181,547	407,980	599,716	2,317,734
1893.....	203,198	470,695	708,228	2,693,747
1894.....	310,277	633,398	770,439	2,855,216
1895.....	241,091	534,479	728,283	2,692,562
1896.....	380,149	787,270	679,799	2,507,752
1897.....	307,128	642,754	630,341	2,221,737
1898.....	309,158	629,363	813,843	2,948,428
1899†.....	459,260	827,941	781,809	2,947,369

* See foot-note, table 16. † Since 1899, exports by provinces have not been published in Trade and Navigation Report.

TABLE 6.

COAL.

IMPORTS OF BITUMINOUS COAL.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1880.....	457,049	\$1,220,761	1894.....	1,359,509	\$3,315,094
1881.....	587,024	1,741,568	1895.....	1,444,928	3,321,387
1882.....	636,374	1,992,081	1896.....	1,538,489	3,299,025
1883.....	911,629	2,996,198	1897.....	1,543,476	3,254,217
1884.....	1,118,615	3,613,470	1898.....	1,684,024	3,179,595
1885.....	1,011,875	3,197,539	1899.....	2,171,358	3,691,946
1886.....	930,949	2,591,554	1900.....	2,439,764	4,310,964
1887.....	1,149,792	3,126,225	1901.....	2,516,392	4,956,025
1888.....	1,231,234	3,451,661	1902.....	3,047,392	5,712,058
1889.....	1,248,540	3,255,171	1903.....	3,511,412	7,776,717
1890.....	1,409,282	3,528,959	1904.....	4,053,900	9,108,208
1891.....	1,598,855	4,060,896	1905.....	4,176,274	8,002,896
1892.....	1,615,226	4,099,221	1906*.....	4,495,550	8,360,348
1893.....	1,603,154	3,967,764			

* Duty, 53 cts. per ton.

TABLE 7.

COAL.

IMPORTS OF ANTHRACITE COAL.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1880.....	516,729	\$1,509,960	1894.....	1,530,522	\$6,354,040
1881.....	572,092	2,325,937	1895.....	1,404,342	5,350,627
1882.....	638,273	2,666,356	1896.....	1,574,355	5,667,096
1883.....	754,891	3,344,936	1897.....	1,457,295	5,695,168
1884.....	868,000	3,831,283	1898.....	1,460,701	5,874,685
1885.....	910,324	3,909,844	1899.....	1,745,460	6,490,509
1886.....	995,425	4,028,050	1900.....	1,654,401	6,602,912
1887.....	1,100,165	4,423,062	1901.....	1,933,283	7,923,950
1888.....	†2,138,627	5,291,875	1902.....	1,652,451	7,021,939
1889.....	1,291,705	5,199,481	1903.....	1,456,713	7,028,664
1890.....	1,201,335	4,595,727	1904.....	2,275,018	10,461,223
1891.....	1,399,067	5,224,452	1905*	2,604,137	12,093,371
1892.....	1,479,106	5,640,346	1906.....	2,200,863	10,304,308
1893.....	1,500,550	6,355,285			

* Coal anthracite, and anthracite coal dust. Duty free.

† In Table 7, Imports of Anthracite Coal, a very considerable increase will be noticed in 1888 over 1887, an increase of over ninety-four per cent, the falling off again in 1889 being quite as remarkable. The average values per ton for the three years 1887, 1888 and 1889, were \$4.02, \$2.47 and \$4.03 respectively. Although a duty of fifty cents per ton on anthracite coal was removed May 13, 1887, it is hardly thought this would account for the changes indicated, and unless some error may possibly have crept into the Trade and Navigation Report, no explanation is available.

TABLE 8.

COAL.

IMPORTS OF COAL DUST.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1880.....	3,565	\$ 8,877	1894.....	117,573	\$ 49,510
1881.....	337	666	1895.....	181,318	52,221
1882.....	471	900	1896.....	210,386	53,742
1883.....	8,154	10,082	1897.....	225,562	59,609
1884.....	12,782	14,600	1898.....	229,445	45,556
1885.....	20,185	20,412	1899.....	276,547	44,717
1886.....	36,230	36,996	1900.....	330,174	98,349
1887.....	31,401	33,178	1901.....	414,432	275,559
1888.....	28,808	34,730	1902.....	489,548	264,550
1889.....	39,980	47,139	1903.....	550,883	420,317
1890.....	53,104	29,818	1904.....	608,041	544,123
1891.....	60,127	36,130	1905.....	650,261	343,456
1892.....	82,091	39,840	1906*	747,251	489,180
1893.....	109,585	44,474			

* Duty, 20 p. c., not over 13c. per ton.

With statistics of production, exports and imports of coal available, an estimate of the Canadian consumption can very readily be made, but as the statistics of imports do not cover the same period of 12 months as the other figures the results can only be taken as approximate.

Following is an estimate of the consumption of coal in 1906, while table 9 shows the statistics of consumption annually since 1886.

CONSUMPTION OF COAL IN CANADA, 1906.

	Tons.	Tons.
Production, Table 3.....	9,762,601	
Exports of Canada, Table 4.....	1,835,041	
Home Consumption of Canadian Coal.....		7,927,560
Imports, Tables 6, 7, 8.....	7,443,664	
Exports, not Produce.....	44,758	
Canadian Consumption of Imported Coal.....		7,398,906
Total Consumption of Coal in Canada, 1906.....		15,326,466

It will be observed that approximately one-half of the coal consumed is imported, and one-half from Canadian mines. Taking the exports of Canadian coal into consideration, however, it would appear that the total output would supply about 60 per cent of the Dominion's requirements.

TABLE 9.

COAL.

CONSUMPTION OF COAL IN CANADA.

Calendar Year.	Canadian.	Imported.	Total.	Percentage Canadian.	Percentage Imported.	Consump- tion per capita.
	Tons.	Tons.	Tons.			Tons.
1886.....	1,595,950	1,884,161	3,480,111	45·9	54·1	·758
1887.....	1,848,365	2,192,260	4,040,625	45·7	54·3	·871
1888.....	2,013,925	3,314,353	5,328,278	37·8	62·2	1·137
1889.....	1,992,988	2,490,931	4,483,919	44·4	55·6	·946
1890.....	2,360,196	2,581,187	4,941,383	47·8	52·2	1·031
1891.....	2,606,490	2,980,222	5,586,712	46·7	53·3	1·153
1892.....	2,464,012	3,082,429	5,546,441	44·4	55·6	1·133
1893.....	2,823,187	3,110,462	5,933,649	47·6	52·4	1·198
1894.....	2,743,376	2,917,818	5,661,194	48·5	51·5	1·130
1895.....	2,467,109	2,933,752	5,400,861	45·7	54·3	1·066
1896.....	2,639,055	3,206,456	5,845,511	45·1	54·9	1·140
1897.....	2,799,977	3,124,485	5,924,462	47·3	52·7	1·143
1898.....	3,023,079	3,274,981	6,298,060	48·0	52·0	1·200
1899.....	3,631,882	4,092,361	7,724,243	47·0	53·0	1·454
1900.....	3,989,542	4,361,563	8,351,105	47·8	52·2	1·561
1901.....	4,912,664	4,810,213	9,722,877	50·5	49·5	1·810
1902.....	5,376,413	5,165,938	10,542,351	51·0	49·0	1·927
1903.....	6,005,735	5,491,870	11,507,605	52·2	47·8	2·055
1904.....	6,697,183	6,909,651	13,606,834	49·2	50·8	2·346
1905.....	7,032,661	7,343,880	14,376,541	48·9	51·1	2·396
1906.....	7,927,560	7,398,906	15,326,466	57·7	48·3	2·425

SESSIONAL PAPER No. 26b

Below are given some of the main features of the year's development of the coal mining industry by provinces :—

Nova Scotia :—Detailed statistics of coal production in Nova Scotia are shown in tables 10, 11, 12 and 13. Table 10 shows the annual production since 1872 in both long and short tons ; table 11 shows the quantities of coal raised and sold by counties during 1906 ; table 12 the output by collieries during the same year, and table 13 the distribution of coal sold.

The production in 1906 was greater than in 1905 by about 10 per cent, and over 36 per cent of the output was from the mines of the Dominion Coal Co. at Glace Bay. The coal finds a market in the adjoining provinces and in the United States, as well as locally. As shown in table 13, about 37 per cent is sold within the Province, over 34 per cent went to the Province of Quebec, while a little over 14 per cent was exported to the United States, chiefly to Everett, Mass., for use in the manufacture of gas and coke.

About 8 per cent was sold in New Brunswick, and nearly 3 per cent in Newfoundland.

TABLE 10.
COAL.
NOVA SCOTIA :—OUTPUT, SALES, COLLIERY CONSUMPTION, AND PRODUCTION.

Calendar Year.	Output, Tons, 2,240 lbs.	Sales, Tons, 2,240 lbs.	Colliery Consump- tion, Tons, 2,240 lbs.	Production* Tons, 2,240 lbs.	Output, Tons, 2,000 lbs.	Sales, Tons, 2,000 lbs.	Colliery Consump- tion, Tons, 2,000 lbs.	Production* Tons, 2,000 lbs.	Price per ton. 2,240 lbs.	Value of production.
1872.....	880,950	785,914	110,341	896,255	986,664	880,224	123,582	1,003,806	\$1 75	\$1,568,446
1873.....	1,051,467	881,106	108,398	989,504	1,177,643	986,839	121,406	1,108,245	1 75	1,731,632
1874.....	872,720	749,127	119,582	868,709	977,446	839,022	133,932	972,954	1 75	1,520,240
1875.....	781,165	706,795	124,110	830,905	874,905	791,610	139,003	930,613	1 75	1,454,084
1876.....	709,046	634,207	113,788	747,995	794,804	710,312	127,443	837,755	1 75	1,308,991
1877.....	757,496	687,065	98,841	785,906	848,396	763,513	110,702	880,215	1 75	1,375,339
1878.....	770,603	693,511	88,627	782,138	863,075	776,732	99,262	875,994	1 75	1,368,741
1879.....	788,271	688,624	84,787	773,411	882,863	771,259	94,961	866,230	1 75	1,353,469
1880.....	1,032,710	954,659	96,831	1,051,490	1,156,635	1,069,218	108,451	1,177,689	1 75	1,840,108
1881.....	1,124,270	1,035,014	107,888	1,142,902	1,259,188	1,159,216	120,834	1,280,060	1 75	2,000,079
1882.....	1,365,811	1,290,179	111,381	1,361,560	1,529,703	1,400,290	124,747	1,524,947	1 75	2,382,730
1883.....	1,422,553	1,297,523	111,949	1,409,472	1,593,259	1,453,226	125,383	1,578,609	1 75	2,466,576
1884.....	1,389,295	1,261,650	116,769	1,378,419	1,556,011	1,413,048	130,781	1,543,829	1 75	2,412,233
1885.....	1,352,205	1,254,510	127,624	1,382,134	1,514,470	1,405,051	142,939	1,547,990	1 75	2,418,735
1886.....	1,502,611	1,373,666	142,421	1,516,087	1,682,924	1,538,506	159,512	1,698,018	1 75	2,638,152
1887.....	1,670,830	1,519,684	139,777	1,659,461	1,871,330	1,702,046	156,550	1,858,596	1 75	2,904,057
1888.....	1,776,128	1,576,692	157,443	1,734,135	1,989,263	1,765,895	176,336	1,942,231	1 75	3,034,735
1889.....	1,756,279	1,555,107	158,131	1,713,238	1,967,032	1,741,720	177,107	1,918,827	1 75	2,998,167
1890.....	1,984,001	1,786,111	161,240	1,947,351	2,222,081	2,000,444	180,589	2,181,033	1 75	3,407,864
1891.....	2,044,784	1,849,945	174,983	2,024,928	2,290,158	2,071,938	195,981	2,267,919	1 75	3,543,624
1892.....	1,942,780	1,752,934	175,992	1,928,026	2,175,913	1,963,286	196,103	2,159,389	1 75	3,374,046
1893.....	2,223,042	1,977,543	205,425	2,182,968	2,489,807	2,214,848	230,076	2,444,924	1 75	3,820,194
1894.....	2,250,631	2,000,920	196,206	2,257,126	2,520,707	2,308,231	219,751	2,527,982	1 75	3,949,970
1895.....	1,999,756	1,738,098	193,639	1,986,737	2,239,727	2,008,270	216,875	2,225,145	1 75	3,476,790
1896.....	2,292,675	2,046,828	192,975	2,239,803	2,567,796	2,292,447	216,132	2,508,579	1 75	3,919,655
1897.....	2,340,031	2,044,672	181,716	2,226,388	2,690,835	2,290,032	203,522	2,493,554	1 75	3,896,179
1898.....	2,262,636	2,121,126	167,428	2,288,554	2,534,175	2,375,661	187,519	2,563,180	1 75	4,004,970
1899.....	2,865,443	2,633,989	177,460	2,811,449	3,209,286	2,950,067	198,755	3,148,822	2 00	5,622,898
1900.....	3,298,791	2,998,737	236,563	3,235,300	3,694,646	3,358,585	264,951	3,623,536	2 50	8,088,250
1901.....	3,821,033	3,411,127	301,434	3,712,561	4,279,557	3,820,462	337,606	4,158,068	1 75	6,496,982
1902.....	4,725,480	4,229,120	379,198	4,608,318	5,292,538	4,736,614	424,702	5,161,316	2 00	9,216,636
1903.....	5,215,562	4,565,720	481,903	5,047,623	5,841,429	5,113,607	539,731	5,653,388	2 00	10,095,246
1904.....	5,131,985	4,551,740	444,904	4,996,644	5,747,823	5,097,949	498,292	5,896,241	2 00	9,993,288
1905.....	5,197,877	4,613,818	427,774	5,041,592	5,821,622	5,167,476	479,107	5,046,583	2 00	10,083,184
1906.....	5,844,813	5,083,131	460,891	5,554,022	6,546,191	5,704,307	476,198	6,220,505	2 00	11,108,044

* This production is obtained by adding sales and colliery consumption. For sales previous to 1872, see report of the Department of Mines, Nova Scotia, 1883, page 68.

TABLE 11.

COAL.

NOVA SCOTIA :—COAL TRADE BY COUNTIES, 1906.

CALENDAR YEAR.	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.	Tons, 2,000 lbs.
1st Quarter.....	203,286	173,387	184,172	147,067	1,028,587	697,538	32,769	22,179
2nd "	162,721	142,204	201,771	170,647	1,266,300	1,205,178	79,712	60,163
3rd "	151,534	128,862	179,665	159,535	1,311,040	1,366,344	95,006	93,493
4th "	142,193	115,855	203,888	180,061	1,198,480	952,233	105,067	83,561
Total, 1906.....	659,734	566,308	769,496	657,310	4,804,407	4,221,293	312,554	259,396
" 1905.....	693,500	595,064	668,454	560,937	4,248,970	3,858,641	210,698	152,884

7-8 EDWARD VII., A. 1908

TABLE 12.

COAL.

NOVA SCOTIA :—OUTPUT BY COLLIERIES DURING CALENDAR YEAR 1906.

Colliery.	Tons, 2,000 lbs.	Colliery.	Tons, 2,000 lbs.
<i>Cumberland County.</i>		<i>Inverness County.</i>	
Joggins	57,200	Mabou	24,725
Minudie	37,939	Port Hood	20,829
Scotia	2,128	Inverness Ry. & Coal Co.	261,411
Springhill	480,569	<i>Cape Breton County.</i>	
Strathcona	26,499	Sydney Coal Co.	3,775
Prospect	8,150	Dominion Coal Co.	3,979,075
Maritime	47,248	<i>Cape Breton County.</i>	
<i>Pictou County.</i>		N. Scotia Steel & Coal Co.	770,655
Acadia		Gowrie & Blockhouse Col- lieries	50,340
Nova Scotia Steel and Coal Co.	383,285	McKay Mining Co.	562
Intercolonial	45,087	Cape Breton Coal Co.	5,590
	341,124		6,546,191

TABLE 13.

COAL.

NOVA SCOTIA :—DISTRIBUTION OF COAL SOLD.

Markets.	Calendar Year.					
	1904.		1905.		1906.	
	Tons, 2,000 lbs.	Per cent.	Tons, 2,000 lbs.	Per cent.	Tons, 2,000 lbs.	Per cent.
Nova Scotia, transported by land	918,822	18·0	1,145,255	27·4	1,542,301	27·04
Nova Scotia, transported by sea	724,289	14·2	485,574	9·4	594,647	10·42
Total, Nova Scotia	1,643,111	32·2	1,900,829	36·8	2,136,948	37·46
New Brunswick	474,053	9·3	477,360	9·2	468,273	8·21
Prince Edward Island	95,177	1·9	85,099	1·7	77,942	1·37
Quebec	1,916,384	37·6	1,721,751	33·3	1,971,860	34·57
Newfoundland	155,794	3·1	165,117	3·2	166,564	2·92
United States	730,658	14·3	755,433	14·6	817,672	14·33
West Indies			2,827	·1		
Other countries	82,772	1·6	59,060	1·1	65,048	1·14
Total	5,097,949	100·0	5,167,476	100·0	5,704,307	100·00

New Brunswick :—The production of coal in this Province has never been large, but the industry has been showing an important development during the past two years. The production in 1906 is estimated at about 34,076 short tons.

TABLE 14.

COAL.

NEW BRUNSWICK :—PRODUCTION.

Calendar Year.	Tons.	Value.	Value per ton.
1887.....	10,040	\$ 23,607	\$2 35
1888.....	5,730	11,050	1 93
1889.....	5,673	11,733	2 07
1890.....	7,110	13,850	1 95
1891.....	5,422	11,030	2 03
1892.....	6,768	9,375	1 39
1893.....	6,200	9,837	1 59
1894.....	6,469	10,264	1 59
1895.....	9,500	14,250	1 50
1896.....	7,500	11,250	1 50
1897.....	6,000	9,000	1 50
1898.....	6,160	9,240	1 50
1899.....	10,528	15,792	1 50
1900.....	10,000	15,000	1 50
1901.....	17,630	51,857	2 94
1902.....	18,795	39,680	2 11
1903.....	16,000	40,000	2 50
1904.....	9,112	18,224	2 00
1905.....	29,400	58,800	2 00
1906.....	34,076	68,152	2 00

North West Territories :—The development of the western prairies, the rapid growth of population with the accompanying demand for fuel both for domestic use and for transportation, as well as the demand for fuel by the mining and metallurgical industry of British Columbia, have been responsible for a large increase in the production of coal from what are now the new Provinces of Alberta and Saskatchewan. A small quantity is also mined for local use in the Yukon Territory.

Statistics of production show a total output in 1906 of 1,361,758 tons, as compared with 1,046,513 tons in 1905, and over twice the production in 1903.

This output includes bituminous and lignite coal, as well as a growing production of semi-anthracite from Banff.

TABLE 15.

COAL.

NORTH WEST TERRITORIES :—PRODUCTION.

Calendar Year.	Tons.	Value.	Value per ton.
1887.....	74,152	\$ 157,577	\$ 2 13
1888.....	113,124	183,354	1 59
1889.....	97,364	179,640	1 85
1890.....	128,953	198,498	1 54
1891.....	174,131	437,243	2 51
1892.....	184,370	469,930	2 55
1893.....	238,395	598,745	2 51
1894.....	199,991	488,980	2 45
1895.....	185,654	414,064	2 23
1896.....	225,868	606,891	2 69
1897.....	267,163	667,908	2 50
1898.....	340,088	825,220	2 43
1899.....	334,600	811,500	2 43
1900.....	351,950	839,375	2 38
1901.....	391,139	1,008,917	2 58
1902.....	478,129	1,110,521	2 32
1903.....	614,445	1,316,743	2 14
1904.....	786,617	1,591,545	2 02
1905.....	1,046,513	2,167,249	2 07
1906.....	1,361,758	2,806,908	2 06

The special features of this industry have been described by Mr. Denis of this Department as follows :—

“The following short account of the development of the western coal industry during the past year is given as the result of a visit to the various fields :—

The coal industry along the Crowsnest branch of the Canadian Pacific railway is developing very quickly. At Taber, some thirty miles east of Lethbridge, the Reliance Coal Company, which started work about a year ago, has now a very complete surface plant, and is in a position to produce 300 tons a day.

At Lethbridge, the Alberta Railway and Irrigation Company (late Alberta Railway and Coal Company), have extended their workings under the valley of the river. They are continually introducing improvements and additions at their colliery, the latest being a new Rand compressor with a free air capacity of 3,300 cubic feet a minute.

The Diamond Coal Company is at present starting to develop a colliery six miles north of Lethbridge on the opposite bank of the

SESSIONAL PAPER No. 26b

river. The intention of the Company is to develop the property for the next eighteen months, at which time the new Canadian Pacific Railway bridge spanning the valley is expected to be completed, and will bring the line of railway within a short distance of the mine.

At Lundbreck the Lund-Breckenridge Coal Company's mine, which was only in the development stage last year, is now the centre of quite a large settlement. It has a very complete and up-to-date surface plant, with a steel head frame sixty-five feet high. The mine only began shipping in April and has now an output of 150 to 200 tons a day. The capacity of the screens is at present 500 tons, but it is capable of large extensions.

At Frank, the Canadian-American Coal Company's principal addition to their surface works is a tippie which is now in course of construction and is designed to handle 2,000 tons a day. The main entry is now in 8,600 feet.

The Hillcrest Coal and Coke Company, whose mine is situated south-east of Frank, Alberta, on section 18, range III, township 7, west of the fifth meridian, started development in September, 1905, and the first shipment of coal was made in March, 1906. They own a spur of standard gauge railway two miles long, connecting the tippie with the Canadian Pacific railway, and have now a production capacity of 200 tons a day.

The West Canadian Collieries Company, offices at Blairmore, which has the only installation in the west of mechanical coke ovens (a set of Belgian ovens of the Bernard type), had been rather troubled by the high contents in ash of their coke. They have installed at Lille a splendidly equipped washer, designed to wash all coal sent to the coke ovens under three-quarters of an inch in size, with the result that the ash in the coke has been reduced by one-half. The washer comprises Lubrig jigs and Spitzkatsen, and can treat 300 tons in a day of ten hours; all the labour in connexion with it is performed by one man at the engine and one labourer. Both collieries, Lille and Bellevue, were working steadily all the year.

At Coleman, the International Coal and Coke Company are building ninety additional coke ovens of beehive pattern. This will double their capacity. The colliery has a very up-to-date plant and a steady output.

The Pacific Coal Company, with mine at Bankhead, near Banff, Alberta, have completed and put in operation their large breaker, to prepare the anthracite coal for the market. It is of the best modern type and probably the most complete in North America. This coal is thoroughly divested of all friable parts so that it can stand long tran-

sportation without breaking up. The result of this preparation, however, is the production of a rather large proportion of anthracite dust. After a long series of careful experiments, the Company is erecting a briquetting plant to use this dust. The plant, which may be in operation at the close of the year, will produce 200 tons of briquets per day. The presses adopted are of the Zwoier pattern.

In the Edmonton district, all the coal mines have been very active, and everywhere provision was being made for a greatly increased output. The city of Edmonton has been growing very rapidly, and the market for coal has naturally grown in proportion.

The feature of the year in the district has been the inauguration of mining by shafts. Previously, all the mines were worked by tunnels driven into the banks of the Saskatchewan river, but there are now three mines that have sunk shafts from 6' to 195 feet. The individual production of the mines is so far small, the largest not exceeding 200 tons in two shifts."

British Columbia :—Statistics of coal production in British Columbia since 1836 are shown in table 16 following. The output in 1906 was the largest yet recorded and showed an increase of more than 10 p. c. over the output in 1905.

The production during 1906 has been well described by the Provincial Mineralogist in the annual report of the Minister of Mines for British Columbia as follows :—

"During the year 1906 the actual production of coal in British Columbia has as yet been confined to the two well known districts, the collieries in the vicinity of the Crowsnest pass, and the collieries on Vancouver island.

In the former of these districts the Crow's Nest Pass Coal Co. has been operating collieries at Michel, Coal Creek, and, for the first portion of the year, at Carbonado ; but latterly this last colliery has been closed down.

The collieries on Vancouver island have been operated by two companies, the Western Fuel Co. at Nanaimo, and the Wellington Colliery Co. at Ladysmith and Comox.

The gross output of the coal mines of the Province for the year was 1,899,076 tons (2,240 lbs.), which, with 17,230 tons taken from stock, makes a total consumption of 1,916,306 tons. Of this total amount, 1,361,728 tons were sold as coal, of which 681,899 tons were for consumption in Canada and 679,829 tons were exported ; while 381,773 tons were used in making coke, and 172,805 tons were used under the Company's boilers, etc., or sold locally.

SESSIONAL PAPER No. 26b

The amount of coke made was 199,227 tons (2,240 lbs.), which, together with 11,670 tons taken from stock, made the sales for the year 210,897 tons.

The following table indicates the markets in which the coal and coke output of the Province was sold :—

Coal.	Coast.	Crowsnest pass.	Total.
Sold for consumption in Canada, tons, 2,240 lbs.....	531,106	150,793	681,899
Sold for export to United States, lbs.....	433,183	230,863	664,046
Sold for exports to other countries, lbs....	15,783	.....	15,783
	980,072	381,656	1,361,728
Coke.			
Sold for consumption in Canada.....	14,547	134,646	149,193
Sold for export to United States.....	8,304	53,400	61,704
Sold for export to other countries.....	.....	.....	.....
	22,851	188,046	210,897

VANCOUVER ISLAND COLLIERIES.

The Vancouver Island collieries mined in 1906 some 1,178,627 tons (2,240 lbs.) of coal, which, with 17,230 tons taken from stock, makes the total amount of coal disposed of 1,195,857 tons, distributed as follows :—

	Long tons.
Sold as coal in Canada.....	531,106
" United States.....	433,183
" other countries.....	15,783
Total sold as coal.....	980,072
Used under companies' boilers, etc.....	138,057
Used in making coke.....	77,728
	1,195,857

The total coal sales of the coast collieries show an increase of 172,042 long tons, or about 21·3 p.c. over the preceding year. The amount of coal exported to the United States is very little greater than it was last year, but amounts to about 45·8 p.c. of the total sales. The chief market for this coal is still San Francisco, although Alaska, with its increasing requirements for mining and smelting, has become an important factor in the export trade, and promises to become greater. The consumption of coal in that portion of British Columbia served by the Coast collieries shows a marked increase, being 150,774 long tons, or 39·6 p.c. greater than during the preceding year.

The production of coke on the Coast is confined to one company, the Wellington Colliery Co., which made in 1906 only 9,842 long tons ; but took from its stock piles some 13,009 tons, making the coke sales 22,851 tons, of which amount 14,547 tons were sold locally, and 8,304

tons were exported, chiefly to Alaska points. The local consumption of coke shows an increase of 9,137 tons, or 169 p.c., due to the active operations of the Vancouver Island copper smelters. The increase in the amount of coke exported is equally marked, being 4,004 tons, or 93 p.c., and is due to the constantly increasing copper smelting operations carried on in Alaska.

While these increases are very considerable, they are not nearly as great as they would have been but for the shortage of labour at the various collieries, which were, therefore, quite unable to satisfy the demand for fuel. A fuel famine seemed to be imminent, and, as a matter of fact, in the spring of 1907 coke had to be and was imported, a cargo of some 3,000 tons having been received by the Crofton smelter from Australia.

The selling price of coal has also advanced very much, so much so that local coal dealers are charging \$7.75 for 2,000 lbs. of coal delivered for domestic use.

CROWSNEST PASS COLLIERIES.

In the Rocky Mountain coal field, the collieries in British Columbia are all operated by the Crow's Nest Pass Coal Company, although over the boundary in the Province of Alberta there are three or four other companies operating. The Crow's Nest Pass Coal Company operated collieries at Michel, Coal Creek, and at Carbonado (Morrissey); the latter, however, was shut down on April 1 and has not since resumed operations. This Company mined during the year 720,449 tons (2,240) of coal, the disposition of which is shown in the following table:—

	Long tons.	
Sold as coal in Canada.....	150,793	
" United States.....	230,863	
	<hr/>	381,656
Used by Company in making coke..		304,045
" under Companies' boilers, etc.....		34,748
		<hr/>
		720,449

The amount of coke produced from the coal noted above was 189,385 long tons, of which 1,339 tons were carried over the year as stock, and 188,046 tons sold; some 134,646 tons for consumption in Canada, all in British Columbia, while 53,400 tons were exported to the United States. The coal sales of the Crow's Nest Company this year are less than during the preceding year by 13,285 tons, or 3·3%. The coke sales also show a decrease of 70,335 tons, or 27·2%. These decreases are accounted for by the fact that in the fall a labour strike closed the mines for six weeks or two months, and later the unusually heavy snow fall blocked the railways to such an extent that they were unable to move the coal."

SESSIONAL PAPER No. 26b

TABLE 16.

COAL.

BRITISH COLUMBIA :—PRODUCTION.

Calendar Year.	Output Tons, 2,240 lbs.	Home Consumption, Tons, 2,240 lbs.	Sold for Export, Tons, 2,240 lbs. †	PRODUCTION.*		Price per ton, 2,240 lbs	Value.
				Tons, 2,240 lbs.	Tons, 2,000 lbs.		
1836-52..	10,000				11,200	4 00	40,000
1852-59..	25,398				28,446	4 00	101,592
1859 †...	1,989				2,228	4 00	7,956
1860.....	14,247				15,957	4 00	56,988
1861.....	13,774				15,427	4 00	55,096
1862.....	18,118				20,292	4 00	72,472
1863.....	21,345				23,906	4 00	85,380
1864.....	28,632				32,068	4 00	114,528
1865.....	32,819				36,757	4 00	131,276
1866.....	25,115				28,129	4 00	100,460
1867.....	31,239				34,988	4 00	124,956
1868.....	44,005				49,286	4 00	176,020
1869.....	35,802				40,098	4 00	143,208
1870.....	29,843				33,424	4 00	119,372
1871-2-3.	148,459				166,274	4 00	593,836
1874.....	81,547	25,023	56,038	81,061	90,788	3 00	243,183
1875.....	110,145	31,252	66,392	97,644	109,361	3 00	292,932
1876.....	139,192	17,856	†122,329	140,185	157,007	3 00	420,555
1877.....	154,052	24,311	115,381	139,692	156,455	3 00	419,076
1878.....	170,846	26,166	164,682	190,848	213,750	3 00	572,544
1879.....	241,301	40,294	192,096	232,390	260,277	3 00	697,170
1880.....	267,595	46,513	225,849	272,362	305,045	3 00	817,086
1881.....	228,357	40,191	189,323	229,514	257,056	3 00	688,542
1882.....	282,139	56,161	232,411	288,572	323,201	3 00	865,716
1883.....	213,299	64,786	149,567	214,353	240,075	3 00	643,059
1884.....	394,070	87,388	306,478	393,866	441,130	3 00	1,181,598
1885.....	365,596	95,227	237,797	333,024	372,987	3 00	999,072
1886.....	326,636	85,987	249,205	335,192	375,415	3 00	1,005,576
1887.....	413,360	99,216	334,839	434,055	486,142	3 00	1,302,165
1888.....	489,301	115,953	365,714	481,667	539,467	3 00	1,445,001
1889.....	579,830	124,574	443,675	568,249	636,439	3 00	1,704,747
1890.....	678,140	177,075	508,270	685,345	767,586	3 00	2,056,035
1891.....	1,029,097	202,697	806,479	1,009,176	1,130,277	3 00	3,027,528
1892.....	826,335	196,223	640,579	836,802	937,218	3 00	2,510,406
1893.....	978,294	207,851	768,917	976,768	1,093,980	3 00	2,930,304
1894.....	1,012,953	165,776	827,642	993,418	1,112,628	3 00	2,980,254
1895.....	939,654	188,349	756,334	944,683	1,058,045	3 00	2,834,049
1896.....	894,882	261,984	634,238	896,222	1,003,769	3 00	2,688,666
1897.....	892,296	290,310	619,860	910,170	1,019,390	3 00	2,730,510
1898.....	1,136,485	375,423	752,863	1,128,286	1,263,680	3 00	3,384,858
1899.....	1,306,324	526,058	751,711	1,277,769	1,431,101	3 00	3,833,307
1900.....	1,590,178	685,667	914,184	1,599,851	1,791,833	3 00	4,799,553
1901.....	1,691,557	799,666	914,163	1,713,829	1,919,488	3 00	5,141,487
1902.....	1,641,626	837,871	776,809	1,614,680	1,808,441	3 00	4,844,040
1903.....	1,450,663	947,499	549,449	1,496,948	1,676,581	3 00	4,490,844
1904.....	1,685,698	1,129,465	533,593	1,663,058	1,862,625	3 00	4,989,174
1905.....	1,736,696	1,089,667	647,343	1,737,010	1,945,452	3 00	5,211,030
1906.....	1,899,076	1,236,476	679,829	1,916,305	2,146,262	3 00	5,748,915

* This production is obtained by adding 'Home Consumption' and 'Sold for Export.'

† 52,935 tons of this amount were exported as sales without the division into the 'Home Consumption' and 'Sold for Export.'

‡ The figures in the 'Sold for Export' column do not agree as they should with those given in table 5, the only explanation being that the data in the two cases are from different sources, and it has not been possible to find out the cause of the difference.

¶ Two months only.

7-8 EDWARD VII., A. 1908

Mr. Denis, who visited some of the coal fields in this district also, refers to some of the coal properties being developed as follows:—

“On the British Columbia side of the Crowsnest pass the coal industry has been very active. One of the noteworthy features is the start which the Canadian Pacific railway is making to mine coal at Hosmer, a station on the railway about eight miles north of Fernie. The work, up to July, had mainly been of a prospecting nature, but there seems to be little doubt that an important colliery will soon be added to those of the Crowsnest pass.

“The Imperial Coal Company own some coal lands on Fording river, a tributary of the Elk river, above Michel creek, and have begun surveys for a line of railway to tap their areas.

“So far, the only producing coal company of the Crowsnest Pass field, is the Crow's Nest Pass Coal Company. This Company has two collieries working actively, at Coal creek and at Michel, and a third one at Carbonado, on which a great deal of work has been done, but which is not producing at present. The year's main improvements at these two collieries have been the completion of a steel tippie at Coal creek, designed to handle an output of 4,000 tons in 10 hours, and the installation of compressed air haulage at the Michel colliery to replace horse haulage. Practically one-half of the coal output is used in the manufacture of coke, which is shipped to the West Kootenay smelters, or exported.

“The Nicola valley is now entered by a branch line of the Canadian Pacific railway from Spences Bridge. It is expected that this will be open for traffic during the autumn. The transport facilities thus afforded should be an incentive to prospecting for coal in this region. Coal certainly occurs there, but nothing very definite is yet known as to the extent of the fields. The Diamond Vale Company have been the most active in the work of prospecting. They have a diamond drill at work continuously on their Quilchena area.

“A couple of diamond drill holes were also bored during the year in the valley between the Coldwater and the Nicola rivers.”

COKE.

Oven coke is made in Nova Scotia, Alberta, and British Columbia. The total quantity of coal charged to ovens during 1906 was 1,297,340 short tons, from which there was produced 768,280 tons of coke, as well as certain by-products from the ovens of the Dominion Iron and Steel Co. at Sydney.

The production by provinces was as follows in tons of 2,000 lbs.:—

Province.	Coal charged to ovens.	Output of coke.	STOCK ON HAND.		Coke sold or used.	Value of sales, etc.
			Jan. 1.	Dec. 31.		
	Tons.	Tons.	Tons.	Tons.	Tons.	\$
Nova Scot a.	765,819	475,773	1,436	845	476,364	1,540,976
Alberta. . . .	103,936	69,372	3,800	3,686	69,486	268,042
Br. Columbia.	427,585	223,135	14,815	1,745	236,205	1,054,485
	1,297,340	768,280	20,051	6,276	782,055	2,863,503

In 1905 the amount of coke sold or used was 700,488 tons, the increase in 1906 being, therefore, 81,567 tons or 11.64 p. c. This increase is mainly due to the growth of the iron and steel metallurgical industries of Nova Scotia, and to the demand for coke for use in the smelting furnaces of British Columbia. Statistics of production since 1886 are shown in tables 1 and 2 following:—

TABLE 1.
COKE.
ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Value per ton.
1886.	35,396	\$101,940	\$2.88
1887.	40,428	135,951	3.36
1888.	45,373	134,181	2.96
1889.	54,539	155,043	2.84
1890.	56,450	166,298	2.95
1891.	57,084	175,592	3.08
1892.	56,135	160,249	2.85
1893.	61,078	161,790	2.65
1894.	58,044	148,551	2.56
1895.	53,356	143,047	2.68
1896.	49,619	110,257	2.22
1897.	60,686	176,457	2.91
1898.	87,600	286,000	3.26
1899.	100,820	350,022	3.47
1900.	157,134	649,140	4.13
1901.	365,531	1,228,225	3.36
1902.	502,043	1,519,185	3.03
1903.	561,318	1,734,404	3.09
1904.	554,083	2,032,048	3.66
1905.	700,488	2,436,211	3.48
1906.	782,055	2,863,503	3.66

TABLE 2.

COKE.

PRODUCTION OF COKE BY PROVINCES.

Calendar Year.	Nova Scotia.		British Columbia.		N. W. Territories.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
1897.....	41,532	90,950	19,154	85,507	.....	.....
1898.....	48,400	111,000	39,200	175,000	.....	.....
1899.....	62,459	178,767	38,361	171,255	.....	.....
1900.....	61,767	223,395	95,367	425,745	.....	.....
1901.....	222,694	590,560	142,837	637,665	.....	.....
1902.....	363,330	899,930	138,713	619,255	.....	.....
1903.....	371,745	888,094	189,573	846,310	.....	.....
1904.....	275,927	805,022	257,172	1,148,090	20,984	78,936
1905.....	386,366	1,054,712	269,256	1,202,035	44,866	179,464
1906.....	476,364	1,540,976	236,205	1,054,485	69,486	268,042

The production in the Province of Nova Scotia is all consumed within that Province. In British Columbia, however, a large portion of the output is exported to the United States. According to direct returns from the companies the quantity of coke sold for export was 69,109 short tons.

This statement of export differs considerably from the figures of export published by the Department of Customs, according to which authority the actual exports were only 37,003 tons (see table 3).

The imports of coke in 1906 were 480,222 tons, chiefly for use in the iron blast furnaces in Ontario.

Statistics of exports and imports of coke, as compiled from the Trade and Navigation reports, are shown in tables 3 and 4.

TABLE 3.
COKE.
EXPORTS OF COKE.

Calendar Year.	Tons.	Value.
		\$
1897	2,987	6,078
1898	3,774	8,394
1899	5,557	18,726
1900	41,529	131,278
1901	57,505	176,990
1902	62,568	180,920
1903	32,608	135,957
1904	102,463	345,031
1905	116,071	509,908
1906	37,003	168,571

TABLE 4.
COKE.
IMPORTS OF OVEN COKE.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1880	3,837	19,353	1894	42,864	176,996
1881	5,492	26,123	1895	43,235	149,434
1882	8,157	36,670	1896	61,612	203,826
1883	8,943	38,588	1897	83,330	267,540
1884	11,207	44,518	1898	135,060	347,040
1885	11,564	41,391	1899	141,284	362,826
1886	11,858	39,756	1900	187,878	506,839
1887	15,110	56,222	1901	308,786	680,138
1888	25,487	102,334	1902	267,142	842,815
1889	29,557	91,902	1903	256,723	1,222,756
1890	36,564	133,344	1904	221,050	765,123
1891	38,533	177,605	1905	371,593	807,842
1892	43,499	194,429	1906 ....Duty free	480,222	1,311,375
1893	41,821	156,277			

PEAT.

Although the production of peat fuel cannot yet be said to have become a well established industry in Canada, there has been a good deal of experimental work in progress at different times and in different localities, which has resulted during the past six years in a small annual production of peat. During 1906 the Condensed Peat Fuel Company, Ltd., of Peterboro, for five months operated their plant $\frac{3}{4}$ of a mile north of Victoria Road, Ontario, and the Montreal and Ottawa Peat Company, Limited, worked for four months on the bog in the township of Alfred, Prescott county. A total of 474 tons of peat was sold, valued at \$1,422.

The Interwest Peat Fuel Co., of Winnipeg, were installing machinery and preparing to operate their bog at Lac du Bonnet, Man. Sales of peat during the past seven years have been reported as follows :—

Year.	Tons.	Value.
1900.....	400	\$ 1,200
1901.....	220	600
1902.....	475	1,663
1903.....	1,100	3,300
1904.....	800	2,400
1905.....	80	260
1906.....	474	1,422

GRAPHITE.

Graphite was mined in Quebec Province during 1906 by the Calumet Mining and Milling Graphite Co., at Calumet, Que., the Diamond Graphite Co., Buckingham, Que., and the Bell Mines, Buckingham, Que., none of which, however, made any shipments. The Buckingham Graphite Co., of Buckingham, shipped a quantity of milled product held over from previous years. In Ontario the Black Donald mine in Brougham tp., was operated by the Ontario Graphite Co., Ltd., and the Elmsley mines, North Elmsley, Lanark Co., by the Globe Refining Co., Ltd., both of Ottawa.

The total quantity of graphite mined was 3,922 tons, of which 1,500 tons were milled. The sales and shipments were 222 tons of crude ore valued at \$5,000, and 165 tons of milled graphite valued at \$13,300, or a total of 387 tons valued at \$18,300.

The value of the imports of plumbago, black-lead and other manufactures of plumbago during 1906 reached a total of \$88,106.

Annual statistics of the production, exports and imports of graphite are shown in the following tables :—

TABLE 1.

GRAPHITE.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.....	500	\$4,000	1896.....	139	\$ 9,455
1887.....	300	2,400	1897.....	436	16,240
1888.....	150	1,200	1898.....		13,698
1889.....	242	3,160	1899.....	1,130	24,179
1890.....	175	5,200	1900.....	1,922	31,040
1891.....	260	1,560	1901.....	2,210	38,780
1892.....	167	3,763	1902.....	1,095	28,300
1893.....	Nil.	Nil.	1903.....	728	23,745
1894.....	3	223	1904.....	452	11,760
1895.....	220	6,150	1905.....	541	16,735
			1906.....	387	18,300

* Exports.

TABLE 2.

GRAPHITE.

EXPORTS.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$ 3,586	1896.....	\$ 9,480
1887.....	3,017	1897.....	4,325
1888.....	1,080	1898.....	13,098
1889.....	538	1899.....	22,490
1890.....	1,529	1900.....	46,197
1891.....	72	1901.....	35,102
1892.....	3,952	1902.....	24,839
1893.....	38	1903.....	43,642
1894.....	223	1904.....	16,567
1895.....	4,833	1905.....	8,114
1906 { Crude.....		Cwt.	\$
{ Manufactures of.....		2,121	2,468
			5,274
			\$ 7,742

TABLE 3.

GRAPHITE.

IMPORTS OF RAW AND MANUFACTURED GRAPHITE.

Fiscal Year.	Plumbago.	Manufactures of plumbago.	
		Black-lead.	Other Manufactures.
1880.....	\$1,677	\$18,055	\$2,738
1881.....	2,479	26,544	1,202
1882.....	1,028	25,132	2,181
1883.....	3,147	21,151	2,141
1884.....	2,891	24,002	2,152
1885.....	3,729	24,487	2,805
1886.....	5,522	23,211	1,408
1887.....	4,020	25,766	2,830
1888.....	3,802	7,824	22,604
1889.....	3,546	11,852	21,789
1890.....	3,441	10,276	26,605
1891.....	7,217	8,292	26,201
1892.....	2,988	13,560	23,085
1893.....	3,293	16,595	23,051
1894.....	2,177	17,614	16,686
1895.....	2,586	13,922	21,988
1896.....	2,865	18,434	19,497
1897.....	1,406	17,863	20,674
1898.....	1,862	19,638	32,653
1899.....	4,979	21,334	36,490
1900.....	4,437	22,078	38,440
1901.....	2,357	25,646	49,890
1902.....	3,649	20,467	43,656
1903.....	2,870	22,559	47,117
1904.....	1,802	26,053	41,510
1905.....	2,499	30,743	44,545

	Duty.			
1906	Plumbago, not ground, etc.....	10 p.c.		
	Black-lead.....	25 "	\$2,791	\$33,907
	Plumbago ground, and manufactures of N.E.S.....	25 "		\$19,058
	Crucibles, clay or plumbago.....	Free..		32,350
Total, 1906.....			\$2,791	\$33,907
				\$51,408

Artificial graphite.—The manufacture of artificial graphite in electric furnaces has been carried on for some years at Niagara Falls, New York, by the International Atcheson Graphite Company. A small plant has now been established on the Canadian side of the river at Niagara Falls, Ont., and the quantity of artificial graphite made during 1906 is reported by the manufacturers as 445,047 pounds.

GYPSUM.

Gypsum is mined in Canada chiefly in the Provinces of Nova Scotia and New Brunswick, also in small quantities in the Province of Ontario and in the northern part of Manitoba.

In 1906 the total quantity of gypsum mined was 492,759 short tons, of which 28,831 tons are reported as having been calcined. The total quantity mined in 1905 was 442,158 short tons, of which 26,855 tons were calcined.

The figures of production as given in table 1 represent the total sales and shipments of crude, ground and calcined gypsum, which in 1906 were 469,022 tons valued at \$643,294, as compared with total sales in 1905 of 442,158 tons valued at \$586,168, showing an increase in 1906 of 26,864 tons or 6 per cent in quantity, and of \$56,126 or 9.7 per cent in value.

The production during the past two or three years has shown an important growth, and the output is now double what it was in 1898.

The average price of the crude gypsum shipped in 1906 was \$1.07 per short ton, as compared with an average of 99 cents in 1905 and 76 cents in 1904.

TABLE 1.
GYPSUM.
ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Average price per ton.	
1886.....	162,000	\$178,742	\$ 1.10	
1887.....	154,008	157,277	1.02	
1888.....	175,887	179,393	1.01	
1889.....	213,273	205,108	0.96	
1890.....	226,509	194,033	0.86	
1891.....	203,605	206,251	1.01	
1892.....	241,048	241,127	1.00	
1893.....	192,568	196,150	1.02	
1894.....	223,631	202,031	0.90	
1895.....	226,178	202,608	0.89	
1896.....	207,032	178,061	0.86	
1897.....	239,691	244,531	1.02	
1898.....	219,256	232,515	1.06	
1899.....	244,566	257,329	1.05	
1900.....	252,101	259,009	1.02	
1901.....	293,799	340,148	1.16	
1902.....	333,599	379,479	1.14	
1903.....	314,489	388,459	1.24	
1904.....	345,961	373,474	1.08	
1905.....	442,158	586,168	1.32	
1906 {	Crude Gypsum.....	442,132	473,960	1.07
	Ground Gypsum.....	3,195	9,823	3.07
	Plaster of Paris, and wall plaster.....	23,695	159,511	6.73
	Total.....	469,022	643,294	1.57

SESSIONAL PAPER No. 26b

TABLE 2.

GYPSUM.

ANNUAL PRODUCTION BY PROVINCES.

CALENDAR YEAR.	NOVA SCOTIA.		N. BRUNSWICK.		ONTARIO.		MANITOBA.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1887. . . .	116,346	116,346	29,102	29,216	8,560	11,715		
1888	124,818	120,429	44,369	48,764	6,700	10,200		
1889.	165,025	142,850	40,866	49,130	7,382	13 128		
1890.	181,285	154,972	39,024	30,986	6,200	8,075		
1891.	161,934	153,955	36,011	33,996	5,660	18,300		
1892.	197,019	170,021	39,709	65,707	4,320	5,399		
1893.	152,754	144,111	36,916	41,846	2,898	10,193		
1894.	168,300	147,644	52,962	48,200	2,369	6,187		
1895. . . .	156,809	133,929	66,949	63,839	2,420	4,840		
1896.	136,590	111,251	67,137	59,024	3,305	7,786		
1897.	155,572	121,754	82,658	118,116	1,461	4,661		
1898.	132,086	106,610	86,083	121,704	1,087	4,201		
1899.	126,754	102,055	116,792	151,296	1,020	3,978		
1900.	138,712	108,828	112,294	145,850	1,095	4,331		
1901.	170,100	136,947	121,595	189,709	1,504	5,692	600	7,800
1902.	206,087	181,425	124,041	170,153	1,917	7,699	1,554	20,202
1903.	189,427	173,881	119,182	172,080	2,720	21,988	3,160	20,510
1904. . . .	218,580	153,600	190,991	187,524	2,390	18,350	4,000	14,000
1905. . . .	272,252	298,248	163,553	232,586	1,853	23,834	4,500	31,500
1906.	333,312	345,414	131,246	250,960	2,965	24,420	3,200	22,500

7-8 EDWARD VII., A. 1908

The greater part of the gypsum mined in Nova Scotia is shipped in the crude state, though a small quantity is ground or calcined by the Windsor Plaster Company at Windsor, N.S. The total sales during the year in this Province were 333,312 tons valued at \$345,414, which is an increase of 61,060 tons over the sales during 1905.

The older quarries at Windsor and Walton have not only increased their shipments, but the Victoria Gypsum Mining and Manufacturing Co., which has been developing a property at St. Anns, C.B., for several seasons, has reached the shipping stage and made an important contribution to the output.

At Amherst also the Maritime Gypsum Co. have commenced shipping from the quarry which they have opened in this vicinity. From the Province of New Brunswick the total shipments of crude and calcined gypsum, etc., were 131,246 tons valued at \$250,960, of which 113,972 tons were crude gypsum and 17,274 calcined and ground. Compared with the shipments of 1905 and 1904 a considerable decrease in output is evidenced. The production is derived mainly from the deposits at Hillsborough, Albert county, in which the most important operator is the Albert Manufacturing Company; while a small production is annually made from the deposits on the Tobique river.

In Ontario small quantities of gypsum have as usual been mined from deposits found along the Grand river. The product is chiefly utilized in the manufacture of wall plaster and alabastine, etc.

In Manitoba the gypsum is quarried north of Lake St. Martin and shipped to Winnipeg, where it is calcined for use as wall plaster by the Manitoba Gypsum Co., Ltd.

Statistics of exports and imports of gypsum products as compiled from the Trade and Navigation reports are shown in tables 3, 4 and 5, following :—

SESSIONAL PAPER No. 26b

TABLE 3.
GYPSUM.
EXPORTS OF CRUDE GYPSUM.

Calendar Year.	NOVA SCOTIA.		NEW BRUNSWICK.		ONTARIO.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1874	67,830	68,164					67,830	68,164
1875	86,065	86,193	5,420	5,420			91,485	91,613
1876	87,720	87,590	4,925	6,616	120	180	92,765	94,386
1877	106,950	93,867	5,030	5,030			111,980	98,897
1878	88,631	76,695	16,335	16,435	489	675	105,455	93,805
1879	95,623	71,353	8,791	8,791	579	720	104,993	80,864
1880	125,685	111,833	10,375	10,987	875	1,240	136,935	124,060
1881	110,303	100,284	10,310	15,025	657	1,040	121,270	116,349
1882	133,426	121,070	15,597	24,581	1,249	1,946	150,272	147,597
1883	145,448	132,834	20,242	35,557	462	837	166,152	169,228
1884	107,653	100,446	21,800	32,751	688	1,254	130,141	134,451
1885	81,887	77,898	15,140	27,730	525	787	97,552	106,415
1886	118,985	114,116	23,498	40,559	350	538	142,833	155,213
1887	112,557	106,910	19,942	39,295	225	337	132,724	146,542
1888	124,818	120,429	20	50	670	910	125,508	121,389
1889	146,204	142,850	31,495	50,862	483	692	178,182	194,404
1890	145,452	139,707	30,034	52,291	205	256	175,691	192,254
1891	143,770	140,438	27,536	41,350	5	7	171,311	181,795
1892	162,372	157,463	27,488	43,623			189,860	201,086
1893	132,131	122,556	30,061	36,706			162,192	159,262
1894	119,569	111,586	40,843	46,538			160,412	158,124
1895	133,369	125,651	56,117	67,593			189,486	193,244
1896	116,331	109,054	64,946	77,535			181,277	186,589
1897	122,984	116,665	66,222	80,485			189,206	197,150
1898	99,215	93,474	70,399	81,433			169,614	174,907
1899	104,795	99,984	96,831	108,094	* $\frac{1}{2}$	12	201,626	208,090
1900							188,262	201,912
1901							236,247	231,594
1902							289,600	295,215
1903							287,496	311,580
1904							298,211	316,436
1905							359,246	388,474
1906							404,464	462,814

*Exported from British Columbia.

TABLE 4.
GYPSUM.
EXPORTS OF GROUND GYPSUM.

Calendar Year.	Nova Scotia.	New Brunswick.	Ontario.	Total.
	\$	\$	\$	\$
1890				105
1891				588
1892				20,255
1893				22,132
1894	2,124	17,930		20,054
1895	3,364	18,827	42	22,233
1896	1,270	19,246	751	21,267
1897	1,655	5,024	84	6,763
1898	1,548	4,900		6,448
1899	205	7,898	20	8,123
1900				19,834
1901				15,337
1902				5,101
1903				12,457
1904				2,333
1905				2,673
1906				2,934

TABLE 5.

GYPSUM.

IMPORTS OF GYPSUM, ETC.

Fiscal Year.	Crude Gypsum.		Ground Gypsum.		Plaster of Paris.	
	Tons.	Value.	Pounds.	Value.	Pounds.	Value.
1880.....	1,854	\$3,203	1,606,578	\$ 5,948	667,676	\$ 2,376
1881.....	1,731	3,442	1,544,714	4,676	574,006	2,864
1882.....	2,132	3,761	759,460	2,576	751,147	4,184
1883.....	1,384	3,001	1,017,905	2,579	1,448,650	7,867
1884.....	.....	3,416	687,432	1,936	782,920	5,226
1885.....	1,353	2,354	461,400	1,177	689,521	4,809
1886.....	1,870	2,429	224,119	675	820,273	5,463
1887.....	1,557	2,492	13,266	73	594,146	4,342
1888.....	1,236	2,193	106,068	558	942,338	6,662
1889.....	1,360	2,472	74,390	372	1,173,996	8,513
1890.....	1,050	1,928	434,400	2,136	693,435	6,004
1891.....	376	640	36,500	215	1,035,605	8,412
1892.....	626	1,182	310,250	2,149	1,166,200	5,595
1893.....	496	1,014	140,830	442	552,130	3,143
1894.....	.....	1,660	23,270	198	422,700	2,386
1895.....	603	960	20,700	88	259,200	1,619
1896.....	1,045	848	64,500	198	297,000	2,000
1897.....	.....	772	45,000	123	969,900	4,489
1898.....	1,147	1,742	35,700	293	329,600	2,025
1899.....	325	692	33,900	338	496,300	3,120
1900.....	77	958	6,300	69	849,100	6,492
1901.....	286	1,125	65,400	1,097	502,200	3,978
1902.....	541	1,697	56,700	249	475,300	2,641
1903.....	1,076	2,187	68,700	228	630,800	3,599
1904.....	249	663	106,800	559	625,100	2,885
1905.....	2,344	7,386	2,255,700	2,681	7,924,100	37,643
1906.....	6,332	22,008	*1,968,690	1,799	12,866,500	43,742

*Equivalent to 6,562 barrels.

Crude gypsum, duty free. Ground gypsum, duty 15%. Plaster of Paris, duty 12½c. per 100 lbs.

MANGANESE.

Manganese was formerly an important mineral product in Nova Scotia and New Brunswick. In recent years, however, there has been but little mining of the mineral, what output there was, coming from the working over of old dumps. No direct returns of production were received during the past two years. The Customs Department reports an export of manganese ore during 1905 of 22 tons, and during 1906 of 93 tons. These figures have been utilized to represent the production. Statistics showing the production and exports of manganese ore are shown in tables 1 and 2, while the imports of oxide of manganese are shown in table 3.

TABLE 1.

MANGANESE.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.	Value per ton.
1886	1,789	\$41,499	\$23.20
1887	1,245	43,658	35.07
1888	1,801	47,944	26.62
1889	1,455	32,737	22.50
1890	1,328	32,550	24.51
1891	255	6,694	26.25
1892	115	10,250	89.13
1893	213	14,578	68.44
1894	74	4,180	56.49
1895	125	8,464	67.71
1896*	123½	3,975	32.19
1897*	15½	1,166	76.46
1898	50	1,600	32.00
1899	1,581	20,004	12.65
1900	30	1,800	60.00
1901*	440	4,820	10.95
1902*	172	4,062	23.62
1903	91	2,775	30.49
1904	66	2,740	41.51
1905*	22	1,720	78.18
1906*	93	925	9.95

* Exports.

TABLE 2.
MANGANESE.
EXPORTS OF MANGANESE ORE.

CALENDAR YEAR.	NOVA SCOTIA.		NEW BRUNSWICK.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
1873.....			1,031	\$20,192	1,031	\$20,192
1874.....	6	\$ 12	776	16,961	782	16,973
1875.....		200	194	5,314	203	5,514
1876.....	21	723	391	7,316	412	8,039
1877.....	106	3,699	785	12,210	891	15,909
1878.....	106	4,889	520	5,971	626	10,860
1879.....	154	7,420	1,732	20,016	1,886	27,436
1880.....	79	3,090	2,100	31,707	2,179	34,797
1881.....	200	18,022	1,504	22,532	1,704	40,554
1882.....	123	11,520	771	14,227	894	25,747
1883.....	313	8,635	1,013	16,708	1,326	25,343
1884.....	134	11,054	469	9,035	603	20,089
1885.....	77	5,054	1,607	29,595	1,684	34,649
1886.....	(a) 441	30,854	1,377	27,484	(a) 1,818	58,338
1887.....	578	14,240	837	20,562	1,415	34,862
1888.....	87	5,759	1,094	16,073	1,181	21,832
1889.....	59	3,024	1,377	26,326	1,436	29,350
1890.....	177	2,583	1,729	34,248	1,906	36,831
1891.....	22	563	233	6,131	255	6,694
1892.....	84	6,180	59	2,025	143	8,205
1893.....	123	12,409	10	112	133	12,521
1894.....	11	720	45	2,400	56	3,120
1895.....	108	6,348	$\frac{1}{10}$	3	108 $\frac{3}{10}$	6,351
1896.....	123 $\frac{1}{2}$	3,975			123 $\frac{1}{2}$	3,975
1897.....	15 $\frac{1}{4}$	1,166			15 $\frac{1}{4}$	1,166
1898.....	11	325			11	325
1899.....	67	2,328	3	82	70	2,410
1900.....					34	1,720
1901.....					440	4,820
1902.....					172	4,062
1903.....					135	1,889
1904.....					123	2,706
1905.....					22	1,720
1906.....					93	925

(a) 250 tons from Cornwallis should more correctly be classed under the heading of mineral pigments.

TABLE 3.
MANGANESE.
IMPORTS: OXIDE OF MANGANESE.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1884.....	3,989	\$ 253	1895.....	64,151	\$2,781
1885.....	36,778	1,794	1896.....	108,590	4,075
1886.....	44,967	1,753	1897.....	70,663	2,741
1887.....	59,655	2,933	1898.....	130,456	5,047
1888.....	65,014	3,022	1899.....	141,356	5,539
1889.....	52,241	2,182	1900.....	126,725	4,155
1890.....	67,452	3,192	1901.....	272,134	8,176
1891.....	92,087	3,743	1902.....	476,331	5,360
1892.....	76,097	3,530	1903.....	279,611	8,051
1893.....	94,116	3,696	1904.....	275,696	7,051
1894.....	101,863	4,522	1905.....	235,289	6,832
			1906 Duty Free...	244,620	5,508

MICA.

Mica mining has become an important industry in Eastern Canada in both the Provinces of Ontario and Quebec. In the former Province mining at present is carried on chiefly in the district immediately north of the city of Ottawa, in the townships of Hull, Templeton and Wakefield, etc., while in Ontario the chief mines are located in the counties of Frontenac, Lanark and Leeds. The mica is used largely in the manufacture of electrical machinery and appliances ; to such an extent in fact that, several of the large electrical manufacturing companies have become directly interested in the mining of the mineral. The principal market for the Canadian product is in the United States, although important quantities are now being exported to Europe, where Canadian mica comes in competition with mica from India.

The annual statistics of production which have been published have been somewhat unsatisfactory for several reasons. In the first place there has been a considerable production of mica by small operators who sell to regular buyers, but of which it is difficult to obtain satisfactory record, and in the next place, and of greater importance, the value of the mica suffers a wide variation from the rough cobbled condition in which it leaves the mine to the prepared and selected mica as it leaves the trimming factories. In many cases returns received from operators show the value of the rough cobbled mica only, while in others the product is valued according to the condition in which it is sold. There are also frequently large stocks of mica carried over from one year to another, awaiting a favourable turn in the market. It may be safely assumed, therefore, that the published statistics do not represent the full value of the mica as it leaves the country.

Returns from producers in 1906 showed total shipments of 574 tons valued at \$303,913, or an average value per ton of \$529.46 as follows, by provinces :—

Province.	Tons.	Value.	Value per ton.
Quebec	283	\$ 159,334	\$ 563.02 ;
Ontario.....	291	144,579	495.84 ;
Total.....	574	\$ 303,913	\$ 529.46.

The average value per ton from individual mines ranged from \$208 to \$806.

The exports of mica according to Customs Department statistics were, during the calendar year 1906, as follows :—

—	Tons.	Value.	Average Value per ton.
To Great Britain.....	167	\$ 58,735	\$ 351.71
To United States.....	735	519,479	706.77
To other countries.....	10	3,705	370.50
Total.....	912	\$ 581,919	\$ 638.07

The imports of mica into the United States from Canada, according to the United States reports on "Commerce and Navigation", were, during the 12 months ending June 1906, 539 tons valued at \$328,991, or an average of \$610.37 per ton ; and during the 12 months ending June 1907, 766 tons valued at \$596,321, or an average of \$777.48 per ton.

The statistics of the production of mica in Quebec and Ontario, as collected and published by the Provincial Bureaus, are as follows :—

Quebec*—

—	Pounds.	Value.	Average Value per lb.
Mica cutting $\frac{1}{8}$ inch.....	106,478	\$ 13,327	\$0.125
" ".....	112,896	20,755	.183
" ".....	75,968	30,048	.395
" ".....	65,565	36,232	.552
" ".....	25,956	18,061	.695
" ".....	9,512	8,891	.934
" ".....	923	760	.823
Total.....	397,298	\$128,074	.322
Split mica.....	72,788	22,973	.315
To this must be added 87 tons of rough-culled mica which we estimate as having yielded about 60,000 lbs. of merchantable mica.....		17,840	.297
Total.....	530,086	\$168,887	

* Mining operations in the Province of Quebec 1906, J. Obalski.

SESSIONAL PAPER No. 26b

Ontario—

According to the Report of the Ontario Bureau of Mines, the production of rough-cobbed mica in Ontario in 1906 was 355 tons valued at \$69,041, or an average of \$194 per ton.

TABLE 1.
MICA.
ANNUAL PRODUCTION.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$ 29,008	1897.	\$ 76,000
1887.....	29,816	1898.....	118,375
1888.....	30,207	1899.....	163,000
1889.....	28,718	1900.....	166,000
1890.....	68,074	1901.....	160,000
1891.....	71,510	1902.....	135,904
1892.....	104,745	1903.....	177,857
1893.....	75,719	1904.....	160,777
1894.....	45,581	1905.....	178,235
1895.....	65,000	1906, 912 tons....	303,913
1896.....	60,000		

TABLE 2.
MICA.
EXPORTS.

Calendar Year.	Value.	Calendar Year.	Value.
1887.....	\$ 3,480	1897.....	\$ 69,101
1888.....	23,563	1898.....	110,507
1889.....	30,597	1899.....	153,002
1890.....	22,468	1900.....	146,750
1891.....	37,590	1901.....	152,553
1892.....	86,562	1902.....	(a) 391,812
1893.....	70,081	1903.....	196,020
1894.....	38,971	1904.....	198,482
1895.....	48,525	1905.....	179,049
1896.....	47,756	1906.....	581,919

(a) Probably includes some material manufactured from mica.

TABLE 3.

MICA.

* IMPORTS OF MICA INTO THE UNITED STATES FROM CANADA, YEARS ENDING
JUNE 30.

Fiscal Year.	Pounds.	Value.
1895.....	546,905	\$ 39,637
1896.....	570,750	53,719
1897.....	404,080	53,399
1898.....	465,779	53,854
1899.....	1,024,098	131,310
1900.....	1,097,067	136,981
1901.....	967,904	161,741
1902.....	854,167	184,287
1903.....	834,035	196,456
1904.....	573,035	137,191
1905.....	506,917	121,560
1906.....	1,078,267	328,991
1907.....	.....	596,322

* The Foreign Commerce and Navigation of the United States.

MINERAL PIGMENTS.

The production of ochres and barytes only are included under this heading.

OCHRES.

The production of ochres in 1906 was 6,758 tons valued at \$36,125, as compared with 5,195 tons in 1905 valued at \$34,675. With the exception of 18 tons in 1906 all the output was derived from the iron oxide deposits near Three Rivers, Champlain county, Que. Only a portion of the output in this district is used for the manufacture of paint: 2,262 short tons valued at \$30,005 were so used in 1906; the balance, 4,480 tons valued at \$6,000, representing the crude iron oxide which is shipped to several cities in Canada and exported to the United States and used in the purification of gas.

The firms mining ochres are as follows :—

Canada Paint Co., Montreal, Que.

Champlain Oxide Co., Three Rivers, Que.

Thomas H. Argall, “ “

Ontario Mineral Paint Works, Campbellville, Ont.

TABLE 1.

MINERAL PIGMENTS.

ANNUAL PRODUCTION OF OCHRES.

Calendar Year.	Tons.	Value.
1886.....	350	\$ 2,350
1887.....	485	3,733
1888.....	397	7,900
1889.....	794	15,280
1890.....	275	5,125
1891.....	900	17,750
1892.....	390	5,800
1893.....	1,070	17,710
1894.....	611	8,690
1895.....	1,339	14,600
1896.....	2,362	16,045
1897.....	3,905	23,560
1898.....	2,226	17,450
1899.....	3,919	20,000
1900.....	1,966	15,398
1901.....	2,233	16,735
1902.....	4,955	30,495
1903.....	6,266	32,760
1904.....	3,925	24,995
1905.....	5,105	34,675
1906.....	6,758	36,125

TABLE 2.
MINERAL PIGMENTS.
IMPORTS OF OCHRES.

Fiscal Year.		Pounds.	Value.
1880		571,454	\$ 6,544
1881		677,115	8,972
1882		731,526	8,202
1883		898,376	10,375
1884		533,416	6,393
1885		1,119,177	12,782
1886		1,100,243	12,267
1887		1,460,128	17,067
1888		1,725,460	17,664
1889		1,342,783	12,994
1890		1,394,811	14,066
1891		1,528,696	20,550
1892		1,708,645	22,908
1893		1,968,645	23,134
1894		1,358,326	18,951
1895		793,258	12,048
1896		1,159,494	16,954
1897		1,504,044	18,504
1898		2,126,592	26,307
1899		2,444,698	31,092
1900		2,474,537	32,017
1901		2,092,067	27,267
1902		2,530,743	33,909
1903		3,215,346	42,243
1904		2,767,580	36,636
1905		3,122,690	35,887
1906	Ochres and ochrey earths and raw siennas	Duty.	
	Oxides, dry fillers, fire-proofs, umbers and burnt siennas N.E.S.	20 p. c.	\$ 23,790
		25 "	33,607
Total, 1906		4,321,530	\$57,397

TABLE 3.
MINERAL PIGMENTS.
EXPORTS OF MINERAL PIGMENTS, IRON OXIDES ETC.

Calendar Year.	Tons.	Value.
1897	512	\$7,706
1898	283	4,227
1899	308	5,408
1900	651	7,154
1901	401	8,233
1902	352	6,182
1903	676	12,770
1904	416	7,260
1905	353	7,704
1906	139	2,379

BARYTES.

The mining of barytes was continued during 1906 by the Ainslie Mining and Railway Company of Halifax at their property at Lake Ainslie, C.B. Total shipments in 1906 were 4,000 tons valued at the mine at \$12,000.

The barytes deposits at Five Islands, Colchester county, Nova Scotia, were being reopened and developed by Messrs. Bayne and Soley Bros., who expected to be able to make shipments in 1907.

TABLE 4.
MINERAL PIGMENTS.
ANNUAL PRODUCTION OF BARYTES.

Calendar Year.	Tons.	Value.
1885.....	300	\$ 1,500
1886.....	3,864	19,270
1887.....	400	2,400
1888.....	1,100	3,850
1889.....		
1890.....	1,842	7,543
1891.....		
1892.....	315	1,260
1893.....		
1894.....	1,081	2,830
1895.....		
1896.....	145	715
1897.....	571	3,060
1898.....	1,125	5,533
1899.....	720	4,402
1900.....	1,337	7,605
1901.....	653	3,842
1902.....	1,096	3,957
1903.....	1,163	3,931
1904.....	1,332	3,702
1905.....	3,360	7,500
1906.....	4,000	12,000

TABLE 5.
MINERAL PIGMENTS.
IMPORTS OF BARYTES.

Fiscal Year.	Cwt.	Value.
1880.....	2,230	\$ 1,525
1881.....	3,740	1,011
1882.....	497	303
1883.....		185
1884.....		229
1885.....	7	14
1886.....		62
1887.....	379	676
1888.....	236	214
1889.....	1,332	987
1890.....	1,322	978

TABLE 6.

MINERAL PIGMENTS.

MISCELLANEOUS IMPORTS, FISCAL YEAR, 1906.

—	Duty.	Quantity.	Value.
Paints and colours, rough stuff and Lbs. fillers, anti-corrosive and anti-fouling paints commonly used for ship hulls, N.E.S. "	25 p. c. 10 "	4,732,911 156,748	\$ 275,703 34,658
Paris green, dry. "			
Paints and colours ground in spirits, and all spirit varnishes and lacquers. Gals.	\$1.12½ per gallon . .	849	2,765
Putty Lbs.	20 p. c.	246,980	3,862
Total			316,988

MINERAL WATERS.

As has been stated in previous reports the following figures of production of mineral waters must be taken more or less as approximations. At a number of places in Canada where mineral springs occur, the waters are being used for drinking or bathing, and are also bottled and sold in considerable quantity. At several points hotels have been erected near springs, the waters of which are claimed to have curative properties. No data are available of the quantities thus used locally. It is, therefore, very difficult to obtain returns which would enable accurate statistics of the industry to be compiled.

TABLE 1.

MINERAL WATERS.

ANNUAL PRODUCTION.

Calendar Year.	Gallons.	Value.	Calendar Year.	Gallons.	Value.
1888.....	124,850	\$11,456	1898.....	555,000	\$100,000
1889.....	424,600	37,360	1899.....		100,000
1890.....	561,165	66,031	1900.....		75,000
1891.....	427,485	54,268	1901.....		100,000
1892.....	640,380	75,348	1902.....		100,000
1893.....	725,096	108,347	1903.....		100,000
1894.....	767,460	110,040	1904.....		100,000
1895.....	739,382	126,048	1905.....		100,000
1896.....	706,372	111,736	1906.....		100,000
1897.....	749,691	141,477			

TABLE 2.

MINERAL WATERS.

IMPORTS.

Fiscal Year.		Value.
1880		\$41,797
1881		55,763
1882		57,953
1883		49,546
1884		48,613
1885		55,864
1886		47,006
1887		52,989
1888		54,891
1889		66,331
1890		71,521
1891		15,721
1892		17,913
1893		27,909
1894		28,130
1895		27,879
1896		32,674
1897		22,142
1898		33,314
1899		38,046
1900		30,343
1901		40,802
1902		91,871
1903		108,130
1904		137,304
1905		161,790
1906 { Mineral waters, natural, not in bottle.....Duty free..		\$ 1,754
{ Mineral and aerated waters....." 20 p. c.		176,885
Total.....		\$178,639

NATURAL GAS.

Natural gas is commercially utilized in Canada in the southern peninsula of the Province of Ontario, and at the town of Medicine Hat, Alberta. The total sales in 1906 show a considerable enlargement over the sales in 1905, due chiefly to the development of the Haldimand County field in Ontario. The total value of the sales of gas in 1906 was returned as \$583,523, as compared with a value of \$379,561 in 1905, an increase of \$203,962 or 53·7 p. c. Of the total sales in 1906 gas to the value of \$532,823 was produced in Ontario, and \$50,700 is the estimated value of the gas produced and utilized at Medicine Hat.

The number of wells supplying gas during 1906 is returned as 357 in Ontario, and 7 in Alberta. Companies making returns of gas production report 102 producing wells and 16 non-producing wells bored during the year.

Statistics of the value of the annual production of natural gas are shown in the following table:—

TABLE 1.
NATURAL GAS.
ANNUAL PRODUCTION.

Calendar Year.	Value.
1892.....	\$ 150,000
1893.....	376,233
1894.....	313,754
1895.....	423,032
1896.....	276,301
1897.....	325,873
1898.....	322,123
1899.....	387,271
1900.....	417,094
1901.....	339,476
1902.....	195,992
1903.....	202,210
1904.....	328,376
1905.....	379,561
1906.....	583,523

PETROLEUM.

The production of crude petroleum in Canada is still confined to the Province of Ontario; the exploration of other oil fields, notably in southern Alberta and British Columbia, on Manitoulin island, Ontario, in New Brunswick and in Gaspé, Quebec, not having yet resulted in any important commercial development.

During the session of 1904 of the Dominion Parliament an act was passed providing for the payment of a bounty of one and a half cents per gallon on all crude petroleum produced from wells in Canada. As the quantity of oil on which bounty has been paid during the year will probably represent most closely the actual output, this figure has been taken as the production during the past two years.

On this basis then the production of crude oil during 1906 was 19,941,357 gallons (569,753 barrels), as compared with 22,193,336 gallons (634,095 barrels) in 1905, showing a falling off of 64,342 barrels or 10 p. c. The average monthly price per barrel was almost the same in 1906 as in 1905.

The record of production in former years was obtained in other ways; for the years 1901 to 1904 inclusive, the production is based on the receipts of Canadian crude oil at refineries to which was added an estimate of the quantity sold directly for fuel and other purposes; for the years previous to 1901 the production of crude oil was obtained from government inspection returns, by assuming a ratio of crude to refined, and the statistics of production on this basis will be found in table 2.

The annual production of crude oil since 1901, showing the quantity, value and average value per barrel is given in table 1 following:—

TABLE 1.

Further details of production during the past six years are as follows:—

Crude Oil.	1901.	1902.	1903.	1904.
	Bls.	Bls.	Bls.	Bls.
Received at refineries.....	508,677	443,333	410,280	455,074
Direct sales for industrial purposes.....	113,715	87,291	76,357	48,400
Total sales of crude oil	622,392	530,624	486,637	503,474
Total sales in gallons.....	21,783,720	18,571,840	17,032,295	17,621,590

SESSIONAL PAPER No. 26b

Production calculated on the basis of the bounty of 1½c. per gallon paid by the Dominion Government.	1905.	1906.
Bounty paid.....	\$332,900	\$299,120
Production of crude oil represented. . .	22,193,336 gals.	19,941,357 gals.
Production of crude in barrels.....	634,095 bls.	569,753 bls.

The following tables illustrate the petroleum industry of Canada by giving the exports, imports, returns of inspection and other data :—

TABLE 1.

PETROLEUM.

ANNUAL PRODUCTION OF CRUDE PETROLEUM SINCE 1901.

Year.	Barrels of 35 gallons.	Value.	Average price per barrel.
1901.....	622,392	\$1,008,275	\$1.62
1902.....	530,624	951,190	1.79½
1903.....	486,637	1,048,974	2.15½
1904.....	503,474	935,895	1.858
1905.....	634,095	856,028	1.35
1906.....	569,753	761,760	1.337

TABLE 2.

PETROLEUM.

CANADIAN OILS AND NAPHTHA INSPECTED, AND CORRESPONDING QUANTITIES OF CRUDE OIL.

Calendar Year.	Refined Oils Inspected.	Crude Equivalent Calculated.	Ratio of Crude to Refined.	Equivalent in Barrels of 35 Gallons.	Average Price per Barrel of Crude.	Value of Crude Oil.
	Gallons.	Gallons.				
1881.....	6,457,270	12,914,540	100:50	368,987	.....	.....
1882.....	6,135,782	13,635,071	100:45	389,573	.....	.....
1883.....	7,447,648	16,550,328	100:45	472,866	.....	.....
1884.....	7,993,995	19,984,987	100:40	571,000	.....	.....
1885.....	8,225,882	20,564,705	100:40	587,563	.....	.....
1886.....	7,768,006	20,442,121	100:38	584,061	\$0 90	\$525,655
1887.....	9,492,588	24,980,494	100:38	713,728	0 78	556,708
1888.....	9,246,176	24,332,042	100:38	695,203	1 02½	713,695
1889.....	9,472,476	24,664,144	100:38	704,690	0 92½	653,600
1890.....	10,174,894	26,776,037	100:38	795,030	1 18	902,734
1891.....	10,065,463	26,435,430	100:38	755,298	1 33½	1,010,211
1892.....	10,370,707	27,291,334	100:38	779,753	1 26½	984,438
1893.....	10,618,804	27,944,221	100:38	798,406	1 09½	874,255
1894.....	11,027,982	29,018,637	100:38	829,104	1 00½	835,322
1895.....	10,674,232	25,414,838	100:42	726,138	1 49½	1,036,738
1896.....	10,684,284	25,438,771	100:42	726,822	1 59	1,155,647
1897.....	10,434,878	24,844,995	100:42	709,857	1 42½	1,011,546
1898.....	11,148,348	26,543,685	100:42	758,391	1 40	1,061,747
1899.....	11,927,981	28,399,955	100:42	808,570	1 48½	1,202,020
1900.....	13,428,422	24,867,449	100:54	710,498	1 62	1,151,007

TABLE 3.

PETROLEUM.

VALUE OF THE PRODUCTION OF CANADIAN OIL REFINERIES.

Calendar Year.	Value.	Calendar Year.	Value.
1887.....	\$1,288,109	1897.....	\$1,672,425
1888.....	1,401,459	1898.....	1,825,265
1889.....	1,414,184	1899.....	1,490,870
1890.....	1,638,420	1900.....	1,620,705
1891.....	1,534,509	1901.....	1,251,373
1892.....	1,782,365	1902.....	1,222,641
1893.....	1,675,784	1903.....	1,302,104
1894.....	1,567,134	1904.....	975,840
1895.....	1,806,237	1905.....	(a) 1,815,525
1896.....	1,876,913	1906.....	(a) 2,120,343

(a) Derived from both Canadian and imported crude oils.

TABLE 4.

PETROLEUM.

TOTAL AMOUNT OF OIL INSPECTED, CANADIAN AND IMPORTED.

Fiscal Year.	Canadian.	Imported.	Total.	Canadian.	Imported.
	Gallons.	Gallons.	Gallons.	Per cent.	Per cent.
1881.....	6,406,783	476,784	6,883,567	93.1	6.9
1882.....	5,910,747	1,351,412	7,262,159	81.4	18.6
1883.....	6,970,550	1,190,828	8,161,378	85.4	14.6
1884.....	7,656,001	1,142,575	8,798,586	87.0	13.0
1885.....	7,661,617	1,278,115	8,939,732	85.7	14.3
1886.....	8,149,472	1,327,616	9,477,088	86.0	14.0
1887.....	8,243,962	1,665,604	9,909,566	83.2	16.8
1888.....	9,545,895	1,821,342	11,367,237	84.0	16.0
1889.....	9,462,834	1,767,812	11,230,646	84.3	15.7
1890.....	10,121,210	2,020,742	12,141,952	83.4	16.6
1891.....	10,270,107	2,022,002	12,292,109	83.6	16.4
1892.....	10,238,426	2,423,445	12,667,871	80.8	19.2
1893.....	10,683,806	2,641,690	13,325,496	80.2	19.8
1894.....	10,824,270	5,633,222	16,457,492	65.8	34.2
1895.....	10,936,992	5,650,994	16,587,986	65.9	34.1
1896.....	10,533,951	5,807,991	16,341,942	64.5	35.5
1897.....	10,506,526	6,248,743	16,755,269	62.7	37.3
1898.....	10,796,847	6,880,734	17,677,581	61.1	38.9
1899.....	11,005,804	7,232,348	18,238,152	60.3	39.7
1900.....	13,014,713	*8,216,207	21,230,920	61.3	38.7
1901.....	12,674,977	*9,232,165	21,907,142	57.9	42.1
1902.....	10,494,874	*10,916,396	21,411,270	49.0	51.0
1903.....	8,615,892	*14,479,176	23,095,068	37.3	62.7
1904.....	7,292,113	*17,369,930	24,662,043	29.6	70.4
1905.....	17,520,035	*10,284,053	27,804,088	63.0	37.0
1906.....	18,634,155	*9,255,200	27,889,355	66.8	33.2

* Item (a) table 5.

SESSIONAL PAPER No. 26b

TABLE 5.

PETROLEUM.

EXPORTS OF CRUDE AND REFINED PETROLEUM.

Calendar Year.	Crude Oil.		Refined Oil.		Total.	
	Gallons.	Value.	Gallons.	Value.	Gallons.	Value.
1881	.....	.....	.....	.....	501	\$ 99
1882	.....	.....	.....	.....	1,119	286
1883	.....	.....	.....	.....	13,283	710
1884	.....	.....	.....	.....	1,098,090	30,168
1885	.....	.....	.....	.....	337,967	10,562
1886	.....	.....	.....	.....	241,716	9,855
1887	.....	.....	.....	.....	473,559	13,831
1888	.....	.....	.....	.....	196,602	74,542
1889	.....	.....	.....	.....	235,855	10,777
1890	.....	.....	.....	.....	420,492	18,154
1891	446,770	\$ 18,471	585	\$104	447,355	18,575
1892	310,387	12,945	1,146	100	311,533	13,045
1893	107,719	3,696	2,196	394	109,915	4,090
1894	53,985	2,773	5,297	513	59,282	3,286
1895	22,831	1,044	10,237	2,023	33,068	3,067
1896	601	101	7,489	999	8,090	1,100
1897	.....	.....	342	49	342	49
1898	96	4	12,735	3,001	12,831	3,005
1899	.....	.....	3,425	859	3,425	859
1900	40	2	8,559	394	8,599	2,396
1901	14,168	691	375	66	14,543	757
1902	400	40	626	146	1,026	186
1903	350	15	1,013	190	1,363	205
1904	4,207	213	2,126	470	6,333	683
1905	35	2	7,228	2,078	7,263	2,080
1906	900	141	8,938	1,401	9,838	1,542

TABLE 6.

PETROLEUM.

IMPORTS OF PETROLEUM AND PRODUCTS OF.

Fiscal Year.		Gallons.	Value.
			\$
1880.		687,641	131,359
1881.		1,437,475	262,168
1882.		3,007,702	398,031
1883.		3,086,316	358,546
1884.		3,160,282	380,082
1885.		3,767,441	415,195
1886.		3,819,146	421,836
1887.		4,290,003	467,003
1888.		4,523,056	408,025
1889.		4,650,274	484,462
1890.		5,015,650	515,852
1891.		5,071,386	498,330
1892.		5,649,145	475,732
1893.		6,002,141	446,389
1894.		6,597,108	439,988
1895.		7,577,674	525,372
1896.		8,005,891	735,913
1897.		8,415,302	697,169
1898.		9,074,311	724,519
1899.		10,394,208	763,303
1900.		9,633,647	864,833
1901.		11,082,822	982,640
1902.		13,220,005	1,107,207
1903.		18,799,312	1,643,371
1904.		24,521,115	2,152,623
1905.		35,296,332	2,151,514
1906	Oils :--		
	Mineral :	Duty.	Gallons. Value.
	(a) Coal and kerosene, distilled, purified or refined, naphtha and petroleum. N.E.S	2½c.p.gal.	9,255,200 812,226
	(b) Products of petroleum.....	2½c. "	1,633,309 177,069
	(c) Crude petroleum, gas oils (other than benzine or gasoline).....	1½c. "	19,680 1,282
	Petroleum crude, fuel and gas oils (8233 specific gravity).....	Free.	19,805,656 667,172
	(d) Illuminating oils composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon.....	20 p. c.	3,536 1,490
	(e) Lubricating oils composed wholly or in part of petroleum, costing less than 25 cents per gallon.....	2½c.p.gal.	1,907,029 248,938
Total.....			32,624,410 1,908,177

TABLE 7.*

PETROLEUM.

IMPORTS OF CRUDE AND MANUFACTURED OILS, OTHER THAN ILLUMINATING.

Fiscal Year.	Gallons.	Fiscal Year.	Gallons.
1881.....	960,691	1894.....	1,860,829
1882.....	1,656,290	1895.....	1,106,993
1883.....	1,895,488	1896.....	1,079,965
1884.....	2,017,707	1897.....	802,286
1885.....	2,489,326	1898.....	1,047,026
1886.....	2,491,530	1899.....	1,017,278
1887.....	2,624,399	1900.....	1,406,700
1888.....	2,701,714	1901.....	1,838,966
1889.....	2,882,462	1902.....	2,296,353
1890.....	3,054,908	1903.....	4,316,010
1891.....	3,049,384	1904.....	7,141,109
1892.....	3,047,199	1905.....	25,002,047
1893.....	1,481,749	1906.....	23,365,674

*The figures for the years from 1881 to 1894, inclusive, represent the total imports of petroleum and products, less the quantity of imported illuminating oils, inspected by the Inland Revenue Department. For 1895 and subsequent years, the table is composed of items (b), (c) and (e) of table 5.

TABLE 8.

PETROLEUM.

IMPORTS OF PARAFFINE WAX.

Fiscal Year.	Pounds.	Value.
1883.....	43,716	\$ 5,166
1884.....	39,010	6,079
1885.....	59,967	8,123
1886.....	62,035	7,953
1887.....	61,132	6,796
1888.....	53,862	4,930
1889.....	63,229	5,250
1890.....	239,229	15,844
1891.....	753,854	50,275
1892.....	733,873	48,776
1893.....	452,916	38,935
1894.....	208,099	15,704
1895.....	163,817	11,579
1896.....	150,287	10,042
1897.....	138,703	7,945
1898.....	103,570	5,987
1899.....	92,242	4,025
1900.....	47,400	3,529
1901.....	118,844	9,639
1902.....	225,885	12,750
1903.....	592,642	23,674
1904.....	418,967	18,440
1905.....	81,992	7,795
1906 (Duty, 25 p. c.) ..	112,612	9,721

TABLE 9.

PETROLEUM.

IMPORTS OF PARAFFINE WAX CANDLES.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	10,445	\$2,269	1894.....	10,818	\$1,685
1881.....	7,494	1,683	1895.....	19,448	2,541
1882.....	5,818	1,428	1896.....	25,787	4,072
1883.....	7,149	1,734	1897.....	25,114	2,929
1884.....	8,755	2,229	1898.....	60,802	4,427
1885.....	9,247	2,449	1899.....	62,331	5,856
1886.....	12,242	2,587	1900.....	27,663	3,671
1887.....	21,364	3,611	1901.....	44,562	3,588
1888.....	22,054	2,829	1902.....	51,120	5,752
1889.....	8,038	1,337	1903.....	83,377	9,025
1890.....	7,233	1,186	1904.....	83,471	9,078
1891.....	10,598	2,116	1905.....	137,353	15,293
1892.....	9,259	1,952	1906 (Duty, 25		
1893.....	8,351	1,735	p.c.).....	148,808	15,804

PHOSPHATE.

The phosphate or apatite mined in Canada in recent years has been chiefly obtained as a by-product in the mining of mica, and the quantity has been comparatively small. In 1906 the production is, according to the authority of Mr. J. F. Higginson of Buckingham, estimated at 850 short tons valued at \$6,375, of which 600 tons were obtained from mines in the Province of Quebec, and 250 tons from Ontario.

At one time this mineral was mined to the extent of from 20,000 to 30,000 tons a year, but the production was displaced by the more cheaply mined phosphates of Carolina, Florida and Tennessee.

Statistics of production and exports are given in tables 1 and 2.

TABLE 1.

PHOSPHATE.

ANNUAL PRODUCTION.

Calendar Year.	Tons.	Average value per ton.	Value.
1886	20,495	\$14.85	\$304,338
1887	23,690	13.50	319,815
1888	22,485	10.77	242,285
1889	30,988	10.21	316,662
1890	31,753	11.37	361,045
1891	23,588	10.24	241,603
1892	11,932	13.20	157,424
1893	8,198	8.65	70,942
1894	6,861	6.00	41,166
1895	1,822	5.25	9,565
1896	570	6.00	3,420
1897	908	4.39	3,984
1898	733	5.00	3,665
1899	3,000	6.00	18,000
1900	1,415	5.02	7,105
1901	1,033	6.07	6,280
1902	856	5.79	4,953
1903	1,329	6.18	8,214
1904	817	5.62	4,590
1905	1,300	6.48	8,425
1906	850	7.50	6,375

TABLE 2.

PHOSPHATE.

EXPORTS.

Calendar Year.	Ontario.		Quebec.		Totals.	
	Tons.	*Value.	Tons.	*Value.	Tons.	*Value.
1878.....	824	\$12,278	9,919	\$195,831	10,743	\$208,109
1879.....	1,842	20,565	6,604	101,470	8,446	122,035
1880.....	1,387	14,422	11,673	175,664	13,060	190,086
1881.....	2,471	36,117	9,497	182,339	11,968	218,456
1882.....	568	6,338	16,585	302,019	17,153	308,357
1883.....	50	500	19,666	427,168	19,716	427,668
1884.....	763	8,890	20,946	415,350	21,709	424,240
1885.....	434	5,962	28,535	490,331	28,969	496,293
1886.....	644	5,816	19,796	337,191	20,460	343,007
1887.....	705	8,277	22,447	424,940	23,152	433,217
1888.....	2,643	30,247	16,133	268,362	18,776	298,609
1889.....	3,547	38,833	26,440	355,935	29,987	394,768
1890.....	1,866	21,329	26,591	478,040	28,457	499,369
1891.....	1,551	16,646	15,720	368,015	17,271	384,661
1892.....	1,501	12,544	9,981	141,221	11,482	153,765
1893.....	1,990	11,550	5,748	56,402	7,738	67,952
1894.....	1,980	10,560	3,470	29,610	5,450	40,170
1895.....			250	2,500	250	2,500
1896.....	1	5	299	2,990	300	2,995
1897.....	70	450	165	400	235	850
1898.....	21	240	702	8,000	723	8,240
1899.....	215	1,850	93	1,725	308	3,575
1900.....					Nil	Nil
1901.....					6	120
1902.....					70	1,880
1903.....					1	20
1904.....					191	5,348
1905.....					40	1,253
1906.....						

* These values do not compare with those in table 1 above; the spot value is adopted for the production, whilst the exports are valued upon quite a different basis.

PYRITES.

Copper pyrites has been mined for many years in the Province of Quebec, at Capelton and Eustis, by the Nichols Chemical Co., and the Eustis Mining Co. A portion of this ore is used at Capelton in the manufacture of sulphuric acid, and the balance exported. The production in 1906 was 32,348 tons valued at \$129,392.

In Ontario, iron pyrites was mined by the American Madoc Mining Co., at Bannockburn and Tweed; by the British American Development Company near Queensboro; by the Lake Superior Power Co., at the Helen mine, Michipicoten; and by the North Land Mining Co., at Rib lake, on the Temiskaming and Northern Ontario railway.

The shipments were 10,395 tons valued at \$40,598. The total production of pyrites was, therefore, 42,743 tons valued at \$169,990, as compared with 33,339 tons valued at \$125,486 in 1905.

The exports of pyrites during 1906 were, according to Customs returns 26,050 tons valued at \$65,349.

Statistics of the production of pyrites, and of the imports of brimstone and sulphur, are given in tables 1 and 2.

TABLE 1.

PYRITES.

ANNUAL PRODUCTION.

Calendar Year.	Tons, 2,000 lbs.	Value.
		\$
1886.....	42,906	193,077
1887.....	38,043	171,194
1888.....	63,479	285,656
1889.....	72,225	307,292
1890.....	49,227	123,067
1891.....	67,731	203,193
1892.....	59,770	179,310
1893.....	58,542	175,626
1894.....	40,527	121,581
1895.....	34,198	102,594
1896.....	33,715	101,155
1897.....	38,910	116,730
1898.....	32,218	128,872
1899.....	27,687	110,748
1900.....	40,031	155,164
1901.....	35,261	130,544
1902.....	35,616	138,939
1903.....	33,982	127,713
1904.....	37,180	134,033
1905.....	33,339	125,486
1906.....	42,743	169,990

TABLE 2.

PYRITES.

IMPORTS :—BRIMSTONE AND CRUDE SULPHUR.

Fiscal Year.	Pounds.	Value.
		\$
1880.....	1,775,489	27,401
1881.....	2,118,720	33,956
1882.....	2,375,821	40,329
1883.....	2,336,085	36,737
1884.....	2,195,735	37,463
1885.....	2,248,986	35,043
1886.....	2,922,043	43,651
1887.....	3,103,644	38,750
1888.....	2,048,812	25,318
1889.....	2,427,510	34,006
1890.....	4,440,799	44,276
1891.....	3,601,748	46,351
1892.....	4,769,759	67,095
1893.....	6,381,203	77,216
1894.....	5,845,463	61,558
1895.....	4,900,225	56,965
1896.....	6,934,190	63,973
1897.....	8,672,751	87,719
1898.....	38,026,798	373,786
1899.....	24,517,026	265,799
1900.....	21,128,656	215,433
1901.....	23,856,651	270,608
1902.....	24,640,735	325,907
1903.....	24,412,737	259,123
1904.....	19,364,730	204,663
1905.....	23,435,140	242,251
1906*	43,047,672	436,156

* Brimstone, crude, or in roll or flour, and sulphur in roll or flour.

SALT.

Salt production in Canada in 1906 was entirely from the Province of Ontario from the deposits in the counties of Essex, Lambton, Middlesex, Huron and Bruce. Returns from thirteen plants showed the total sales of salt as 76,762 tons valued at \$329,130, exclusive of packages which were valued at \$147,705. The stock on hand in manufacturers' hands at the end of the year was 6,365 tons. There were 210 men employed for various periods during the year, to whom \$92,000 was paid in wages.

In 1905 the sales were 67,340 tons valued at \$320,858, and the value of packages used was \$113,004. The Canadian Salt Company of Windsor is the chief operator, producing nearly 50 p. c. of the total output. The system of evaporation used by this firm is the compound double effect vacuum.

In 1896 a few tons of salt were produced at the south end of Lake Winnipegosis, Manitoba, but the industry has not been followed up in this district. Small quantities of brine have occasionally been evaporated at Plumweseep, New Brunswick, and sold locally along the line of the Intercolonial railway. These works have now been taken over by Wm. Harvie of London, England, and preparations are being made to renew the production of salt in this locality.

Annual statistics of salt production are shown in table 1. The exports of salt, which are of small amount, are shown in table 2. Tables 3 and 4 show the quantities and values of the salt imported. The value of salt imported on which duty is levied has ranged from \$20,000 to \$80,000 a year, the value in 1906 being \$59,805.

Salt imported from the United Kingdom, or any British possession, or imported for the use of the sea or gulf fisheries, is free of duty, and a large portion of the trade of Eastern Canada is supplied with salt imported under this class. The quantity imported duty free in 1906 was 101,540 tons valued at \$352,214.

DEPARTMENT OF MINES

7-8 EDWARD VII., A. 1908

TABLE 1.
SALT.
ANNUAL PRODUCTION.

Calendar Year.	Tons.	Value.
1886.....	62,359	\$227,195
1887.....	60,173	166,394
1888.....	59,070	185,460
1889.....	32,832	129,547
1890.....	43,754	198,857
1891.....	45,021	161,179
1892.....	45,486	162,041
1893.....	62,324	195,926
1894.....	57,199	170,687
1895.....	52,376	160,455
1896.....	43,960	169,693
1897.....	51,348	225,730
1898.....	57,142	248,639
1899.....	59,339	254,390
1900.....	62,055	279,458
1901.....	59,428	262,328
1902.....	64,456	292,581
1903.....	62,452	297,517
1904.....	69,477	321,778
1905.....	67,340	320,858
1906.....	76,720	329,130

TABLE 2.
SALT.
EXPORTS.

Calendar Year.	Bushels.	Value.
1880.....	467,641	\$46,211
1881.....	343,208	44,627
1882.....	181,758	18,350
1883.....	199,733	19,492
1884.....	167,029	15,291
1885.....	246,794	18,756
1886.....	224,943	16,886
1887.....	154,045	11,526
1888.....	15,251	3,987
1889.....	8,557	2,390
1890.....	6,605	1,667
1891.....	5,290	1,277
1892.....	2,000	504
1893.....	4,940	1,267
1894.....	4,639	1,120
1895.....	4,865	959
1896.....	3,842	899
1897.....	5,383	1,193
1898.....	5,202	1,252
1899.....	11,205	2,773
1900.....	37,653	8,997
1901.....	39,224	6,510
1902.....	9,331	3,798
Pounds.		
1903.....	1,915,648	5,927
1904.....	1,006,036	4,186
1905.....	1,447,728	6,112
1906.....	618,707	3,437

SESSIONAL PAPER No. 26b

TABLE 3.

SALT.

IMPORTS :—SALT PAYING DUTY.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	726,640	\$ 3,916	1893.....	21,377,339	\$79,838
1881.....	2,588,465	6,355	1894.....	15,867,825	53,336
1882.....	3,679,415	12,318	1895.....	8,498,404	29,881
1883.....	12,136,968	36,223	1896.....	7,665,257	24,550
1884.....	12,770,950	38,949	1897.....	11,911,766	33,470
1885.....	10,397,761	31,726	1898.....	11,068,785	32,792
1886.....	12,266,021	39,181	1899.....	11,781,453	32,839
1887.....	10,413,258	35,670	1900.....	11,023,337	30,180
1888.....	10,509,799	32,136	1901.....	11,625,688	34,087
1889.....	11,190,088	38,968	1902.....	13,892,849	39,605
1890.....	15,135,109	57,549	1903.....	14,554,693	41,785
1891.....	15,140,827	59,311	1904.....	29,779,183	73,826
1892.....	18,643,191	65,963	1905.....	18,473,868	58,056
			Duty.		
1906	Salt, coarse, N.E.S.....		5c. per 100 lbs.	14,900,108	33,627
	Salt, fine, in bulk.....		5c. "	2,797,950	7,983
	Salt, N. E. S., in bags, barrels or other packages.....		7½c. "	3,668,006	18,195
	Total.....			21,366,064	59,805

TABLE 4.

SALT.

IMPORTS :—SALT NOT PAYING DUTY.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	212,714,747	\$400,167	1893.....	191,595,530	281,462
1881.....	231,640,610	488,278	1894.....	196,668,730	328,300
1882.....	166,183,962	311,489	1895.....	201,691,248	332,711
1883.....	246,747,113	386,144	1896.....	205,005,100	338,888
1884.....	225,390,121	321,243	1897.....	215,844,484	312,117
1885.....	171,571,209	255,719	1898.....	202,634,927	293,410
1886.....	180,205,949	255,359	1899.....	183,046,365	267,520
1887.....	203,042,332	285,455	1900.....	193,554,550	295,253
1888.....	184,166,986	220,975	1901.....	216,271,603	339,887
1889.....	180,847,800	253,009	1902.....	238,648,737	385,629
1890.....	158,490,075	252,291	1903.....	232,708,675	361,185
1891.....	195,491,410	321,239	1904*.....	198,634,047	338,082
1892.....	201,831,217	314,995	1905*.....	196,907,500	340,954
			1906*.....	203,080,000	352,214

*Salt imported from the United Kingdom, or any British possession, or imported for the use of the sea or gulf fisheries.

Following is a list of salt producers:—

The Canadian Salt Co., Ltd.....	Windsor, Ont.
The Saginaw Lumber and Salt Co.....	Sandwich, Ont.
The Western Salt Co., Ltd.....	Mooretown, Ont.
Carter & Kittermaster.....	Sarnia, Ont.
Empire Salt Co.....	"
Sarnia Salt Co.....	"
Sarnia Bay Lumber, Timber and Salt Co.....	"
Elarton Salt Works Co., Ltd.....	Warwick, Ont.
Parkhill Salt Co.....	Parkhill, Ont.
Exeter Salt Works Co.....	Exeter, Ont.
Hensall Salt Works.....	Hensall, Ont.
Western Canada Flour Mills Co., Ltd.....	Goderich, Ont.
R. & J. Ransford.....	Clinton, Ont.
Stapelton Salt Works.....	Clinton, Ont.
Brussels Salt Works.....	Brussels, Ont.
Gray, Young & Sparling Co. of Ont., Ltd.....	Wingham, Ont.
Ontario People's Salt and Soda Co.....	Kincardine, Ont.
Wm. Harvie, London, Eng.....	(H. D. Buchanan, Plumweseep, N.B.)

MISCELLANEOUS NON-METALLIC.

ARSENIC.

Up to 1903 the main source of the production of arsenic in Canada was the Deloro mine in Hastings county, Ontario. The arsenic was recovered at Deloro in the process of treating the auriferous mispickel ores found in the district. In 1902, however, the mine was closed, though the mill continued to work on tailings and ore from the dump until 1903, when operations ceased altogether. This property has recently been taken over by the Deloro Mining and Reduction Company, and the plant entirely rebuilt, with the object of treating ores from Cobalt district as well as the local mispickel ores. There was no production of white arsenic at the plant, however, during 1906.

The ores shipped from the Cobalt district contain important quantities of arsenic, though only a small portion of it is paid for by the purchasing companies. The quantity of arsenic contained in these ores shipped during the past three years has been, according to information collected by the Ontario Bureau of Mines, 72 tons in 1904; 549 tons in 1905; and 1440 tons in 1906 (see table 1). The values as given in the table represent only the quantities paid for.

A plant for the reduction of the Cobalt District ores, and equipped to save the arsenic, has been erected at Copper Cliff, Ontario, by the Canadian Copper Company, the quantity of white arsenic produced during 1906 being 201 tons valued at \$14,058.

TABLE 1.
MISCELLANEOUS—NON-METALLIC.
ANNUAL PRODUCTION OF ARSENIC.

Calendar Year.	Arsenic in Ore.		White Arsenic.	
	Tons.	Value.	Tons.	Value.
1885.....			440	\$17,600
1886.....			120	5,460
1887.....			30	1,200
1888.....			30	1,200
1889.....			Nil.	Nil.
1890.....			25	1,500
1891.....			20	1,000
1892.....			Nil.	Nil.
1893.....			"	"
1894.....			7	420
1895.....			Nil.	Nil.
1896.....			"	"
1897.....			"	"
1898.....			"	"
1899.....			57	4,872
1900.....			303	22,725
1901.....			695	41,676
1902.....			800	48,000
1903.....			257	15,420
1904.....	72	\$ 903		
1905.....	549	2,692		
1906.....	1,440	15,858	201	14,058

7-8 EDWARD VII., A. 1908

TABLE 2.
MISCELLANEOUS.—NON-METALLIC.
IMPORTS OF ARSENIC.

Fiscal Year.	Pounds.	Value.	Fiscal Year.	Pounds.	Value.
1880.....	18,197	\$ 576	1894.	292,505	10,018
1881.....	31,417	1,070	1895.	1,115,697	31,932
1882.....	138,920	3,962	1896.....	664,854	27,523
1883.....	51,953	1,812	1897.....	152,275	8,378
1884.....	19,337	773	1898.	291,967	14,270
1885.....	49,080	1,566	1899.....	582,383	24,203
1886.....	30,181	961	1900.....	230,730	11,035
1887.....	32,436	1,116	1901.....	159,263	8,361
1888.....	27,510	1,016	1902.....	106,857	6,004
1889.....	69,269	2,434	1903.....	298,375	11,824
1890.....	138,509	4,474	1904.....	414,065	12,421
1891.....	115,248	4,027	1905.....	268,274	7,661
1892.....	302,958	9,365	1906 Duty Free.	446,975	19,169
1893.....	447,079	\$12,907			

CHALK AND WHITING.

These materials are not produced in Canada, but statistics of their importation are given to show the market for them in Canada.

TABLE 3.
MISCELLANEOUS.—NON-METALLIC.
IMPORTS OF CHALK.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.. . . .	\$2,117	1894.....	\$ 11,308
1881.....	2,768	1895.....	7,730
1882.....	2,882	1896.....	6,467
1883.. . . .	5,067	1897.....	7,432
1884.....	2,589	1898.....	9,338
1885.....	8,003	1899.. . . .	10,461
1886.....	6,583	1900.....	12,212
1887.....	5,635	1901.....	11,629
1888.....	5,865	1902.....	11,337
1889.....	5,336	1903.....	16,497
1890.....	7,221	1904.....	19,163
1891.....	8,193	1905.....	20,896
1892.....	9,558	1906*	23,853
1893.....	9,966		

* Chalk prepared. Duty, 20 p.c.

TABLE 4.

MISCELLANEOUS.—NON-METALLIC.

IMPORTS OF WHITING.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	84,115	\$26,092	1894.....	103,633	\$26,649
1881.....	47,480	16,637	1895.....	102,751	25,441
1882.....	36,270	16,318	1896.....	113,791	27,322
1883.....	76,012	29,334	1897.....	102,453	22,541
1884.....	76,268	28,230	1898.....	166,293	25,761
1885.....	67,441	23,492	1899.....	134,884	34,310
1886.....	65,124	25,533	1900.....	127,455	34,575
1887.....	47,246	15,191	1901.....	209,868	60,878
1888.....	76,619	20,508	1902.....	153,982	42,136
1889.....	84,658	22,735	1903.....	139,804	39,867
1890.....	96,243	27,471	1904.....	186,919	42,507
1891.....	84,679	27,504	1905.....	198,485	51,215
1892.....	102,985	26,867	1906*.....	160,030	44,876
1893.....	88,835	25,563			

* Whiting or whitening, gilder's whiting, and Paris white. Duty free.

FELDSPAR.

There was a small production of feldspar from the township of Templeton, Que., the main part of the shipments, however, coming from the townships of Bedford and Portland, Frontenac county, Ontario.

Two companies furnishing statements of shipments in Ontario were the Kingston Feldspar and Mining Co., and the Verona Mining Company. The total shipments, according to returns received, were 16,948 tons valued at \$40,890.

The production at Templeton was used at Buckingham, Que., while the shipments from Ontario were all exported to the United States.

According to Customs returns the exports during 1906 were 18,183 tons valued at \$60,312.

TABLE 5.
MISCELLANEOUS—NON-METALLIC.
PRODUCTION OF FELDSPAR.

Calendar Year.	Tons.	Value.
1890.....	700	\$3,500
1891.....	685	3,425
1892.....	175	525
1893.....	575	4,525
1894.....	Nil.	Nil.
1895.....		*2,545
1896.....	972	*2,583
1897.....	1,400	3,290
1898.....	2,500	6,250
1899.....	3,000	6,000
1900.....	318	1,112
1901.....	5,350	10,700
1902.....	7,576	15,152
1903.....	13,928	18,966
1904.....	11,083	22,166
1905.....	11,700	23,400
1906.....	16,948	40,890

* Exports.

FIRE-CLAY.

Returns of fire-clay production in 1906 show a total output of 6,559 tons valued at \$18,522, which was derived mainly from the clays found with the coal measures at Westville, N. S., and Comox, B.C. Part of the production at Westville was made into fire bricks which were sold at Sydney and local points, while the output at Comox was shipped to the Columbia Clay Company at Victoria and used in the manufacture of pottery and sewer pipe.

TABLE 6.
MISCELLANEOUS—NON-METALLIC.
PRODUCTION OF FIRE-CLAY.

Calendar Year.	Tons.	Value.
1889.....	400	\$4,800
1890.....	Nil.	Nil.
1891.....	250	750
1892.....	1,991	4,467
1893.....	540	700
1894.....	539	2,167
1895.....	1,329	3,492
1896.....	842	1,805
1897.....	2,118	5,759
1898.....	670	1,680
1899.....	599	1,295
1900.....	1,245	4,130
1901.....	3,979	5,920
1902.....	2,741	4,283
1903.....	2,639	3,523
1904.....	5,972	17,463
1905.....	5,088	13,917
1906.....	6,559	18,522

MOULDING SAND.

The figures of production of moulding sand as given in table 7 were derived chiefly from the returns of railway shipments from points in Southern Ontario, together with a small production in Nova Scotia, and do not nearly represent the total production. The publication of the incomplete returns has, therefore, been discontinued for the present.

TABLE 7.
MISCELLANEOUS—NON-METALLIC.
PRODUCTION OF MOULDING SAND.

Calendar Year.	Tons.	Value.
1887	160	\$ 800
1888	169	845
1889	170	850
1890	320	1,410
1891	230	1,000
1892	345	1,380
1893	4,370	9,086
1894	6,214	12,428
1895	6,765	13,530
1896	5,739	11,478
1897	5,485	10,931
1898	10,572	21,038
1899	13,724	27,430
1900	6,181	12,316
1901	14,705	29,410
1902	13,352	27,651
1903	3,658	7,256
1904	3,423	6,790
1905	*	*
1906	*	*

* Returns incomplete.

QUARTZ.

The production of quartz as reported to the Ontario Bureau of Mines for 1906 was 48,376 tons valued at \$65,765. This was mined by the Canadian Copper Company, and Algoma Commercial Company, and used principally as a flux and for converter linings.

TABLE 8.

MISCELLANEOUS—NON-METALLIC.

ANNUAL PRODUCTION OF QUARTZ.

Calendar Year.	Tons.	Value.
1890.....	200	\$ 1,000
1891.....		
1892.....		
1893.....	100	500
1894.....		
1895.....		
1896.....	10	50
1897.....		
1898.....	284	570
1899.....	600	1,260
1900-1905.....		
1906.....	48,376	65,765

TABLE 9

MISCELLANEOUS—NON-METALLIC.

IMPORTS OF "SILEX"—CRYSTALLIZED QUARTZ.

Fiscal Year.	Cwt.	Value.
1880.....	5,252	\$ 2,290
1881.....	3,251	1,659
1882.....	3,283	1,678
1883.....	3,543	2,058
1884.....	3,259	1,709
1885.....	3,527	1,443
1886.....	2,520	1,313
1887.....	14,533	5,073
1888.....	4,808	2,385
1889.....	5,130	1,211
1890.....	1,768	2,617
1891.....	3,674	1,929
1892.....	1,429	1,244
1893.....	2,447	1,301
1894.....	2,451	1,521
1895.....	2,882	1,881
1896.....	3,289	2,174
1897.....	2,564	3,415
1898.....	3,104	2,773
1899.....	3,951	2,595
1900.....	4,021	2,876
1901.....	3,562	2,106
1902.....	4,388	3,858
1903.....	3,514	2,762
1904.....	5,547	4,409
1905.....	8,931	4,475
1906..... Duty Free.	7,465	8,347

TALC.

The production of talc in 1906 was all from the Henderson mine in Huntingdon township, Hastings county, Ontario, and the shipments were 1,234 tons valued at \$3,030. The mineral was exported to United States points, and chiefly used in the manufacture of cosmetics.

TABLE 10.

MISCELLANEOUS—NON-METALLIC.

ANNUAL PRODUCTION OF SOAPSTONE AND TALC.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.....	50	\$ 400	1897.....	157	\$ 350
1887.....	100	800	1898.....	405	1,000
1888.....	140	280	1899.....	450	1,960
1889.....	195	1,170	1900.....	1,420	6,365
1890.....	917	1,239	1901.....	259	842
1891.....	Nil	Nil	1902.....	689	1,804
1892.....	1,374	6,240	1903.....	990	2,739
1893.....	717	1,920	1904.....	840	1,875
1894.....	916	1,640	1905.....	500	1,800
1895.....	475	2,138	1906.....	1,234	3,030
1896.....	410	1,230			

STRUCTURAL MATERIALS.

The structural or building materials included under this heading comprise stone such as building stone, granite, marbles, slate, flag-stones, etc, cement and lime; and the manufactures of clay, such as bricks, tiles, drainpipe, earthenware and coarse pottery.

STONE.

Building stone.

Complete information regarding the production of building stone, excluding granite, is not available. In Ontario the production in 1906 of building and crushed stone, as per returns to the Ontario Bureau of Mines, was valued at \$660,000. For the other provinces the information is incomplete, but a rough estimate would place the total production in Canada at about \$1,830,000.

Statistics of the production of building stone are shown in table 1, the exports and imports of stone in tables 2, 3, and 4.

TABLE 1.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF BUILDING STONE.

Calendar Year.	Value.
1886.....	\$ 642,509
1887.....	552,237
1888.....	641,712
1889.....	913,691
1890.....	964,783
1891.....	708,736
1892.....	609,827
1893.....	1,100,000
1894.....	1,200,000
1895.....	1,095,000
1896.....	1,000,000
1897.....	1,000,000
1898.....	1,300,000
1899.....	1,500,000
1900.....	1,520,000
1901.....	1,650,000
1902.....	1,900,000
1903.....	1,975,000
1904.....	1,930,000
1905.....	1,830,000
1906.....	1,830,000

SESSIONAL PAPER No. 26b

TABLE 2.

STRUCTURAL MATERIALS.

EXPORTS OF STONE AND MARBLE, WROUGHT AND UNWROUGHT.

Calendar Year.	Wrought.	Unwrought.
1890.....	\$ 21,725	\$ 43,611
1891.....	13,398	46,162
1892.....	7,698	47,424
1893.....	9,102	12,532
1894.....	22,576	34,130
1895.....	8,587	51,616
1896.....	4,934	32,897
1897.....	9,415	42,034
1898.....	2,526	65,370
1899.....	5,092	101,931
1900.....	5,933	115,711
1901.....	5,917	157,739
1902.....	8,632	124,829
1903.....	7,684	46,295
1904.....	4,760	17,802
1905.....	3,545	13,089
1906.....	23,097	4,675

TABLE 3.

STRUCTURAL MATERIALS.

IMPORTS OF BUILDING STONE.

Calendar Year.	Value.	Calendar Year.	Value.
1880.....	\$ 35,970	1893.....	\$56,510
1881.....	58,149	1894.....	52,908
1882.....	33,623	1895.....	44,282
1883.....	35,061	1896.....	54,130
1884.....	51,088	1897.....	38,714
1885.....	30,491	1898.....	28,495
1886.....	41,675	1899.....	48,040
1887.....	54,368	1900.....	64,533
1888.....	86,373	1901.....	46,078
1889.....	100,314	1902.....	99,074
1890.....	132,155	1903.....	87,866
1891.....	170,890	1904.....	93,778
1892.....	93,550	1905.....	102,817
1906 { Flagstones, granite and rough freestone, sandstone, and all building stone, not hammered or chiselled. Duty 15 p. c. . . Granite and freestones, dressed; all other building stone dressed, except marble. Duty 20 p. c. . .			\$66,994
			65,134
Total.....			\$132,128

DEPARTMENT OF MINES

7-8 EDWARD VII., A. 1908

TABLE 4.
STRUCTURAL MATERIALS.
IMPORTS OF MANUFACTURES OF STONE OR GRANITE, N.E.S.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$29,408	1893.....	\$49,323
1881.....	36,877	1894.....	49,510
1882.....	37,267	1895.....	51,050
1883.....	45,636	1896.....	51,499
1884.....	45,290	1897.....	34,026
1885.....	39,867	1898.....	41,240
1886.....	41,984	1899.....	60,148
1887.....	41,829	1900.....	57,039
1888.....	47,487	1901.....	66,639
1889.....	61,341	1902.....	72,397
1890.....	84,396	1903.....	78,629
1891.....	61,051	1904.....	141,165
1892.....	39,479	1905.....	150,160
1906 {		Granite—Sawn only.....Duty, 20 p.c.	\$32,316
		" Finished and polished....." 35 p.c.	.....
		" Manufactures of N.O.P....." 35 p.c.	94,717
		Paving blocks....." 20 p.c.	24,817
		Manufactures of stone, N.O.P....." 30 p.c.	26,585
			\$178,435

MARBLE.

There has been no production of marble reported since 1896. During the past year a small quantity of sodalite, a beautiful decorative stone, was shipped from the quarries at Bancroft being opened up by the Princess Quarries Company.

Statistics of the production of marble in former years are shown in table 5, and imports of marble in table 6.

TABLE 5.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF MARBLE.

Calendar Year.	Tons.	Value.
1886.....	501	\$9,900
1887.....	242	6,224
1888.....	191	3,100
1889.....	83	980
1890.....	780	10,776
1891.....	240	1,752
1892.....	340	3,600
1893.....	590	5,100
1894.....	Nil.	Nil.
1895.....	200	2,000
1896.....	224	2,405
1897 to 1906, inclusive.....	Nil.	Nil.

TABLE 6.
STRUCTURAL MATERIALS.
IMPORTS OF MARBLE.

Fiscal Year.		Value.
1880.		\$ 63,015
1881.		85,977
1882.		109,505
1883.		128,520
1884.		108,771
1885.		102,835
1886.		117,752
1887.		104,250
1888.		94,681
1889.		118,421
1890.		99,353
1891.		107,661
1892.		106,268
1893.		96,177
1894.		94,657
1895.		83,422
1896.		90,065
1897.		77,150
1898.		95,894
1899.		101,879
1900.		94,017
1901.		96,159
1902.		130,424
1903.		153,481
1904.		181,511
1905.		145,466
1906	Marble and manufactures of :—	Duty.
	Marble sawn only.....	20 % \$108,718
	Finished and polished.....	35 %
	Rough, not hammered or chiselled.....	15 % 6,827
	Manufactures of, N.O.P.....	35 % 74,044
Total, marble and manufactures of.....		\$189,589

GRANITE.

Granite, both for monumental and building purposes, was quarried as usual in Nova Scotia, New Brunswick, Quebec, and British Columbia.

In Nova Scotia the industry was confined to the vicinities of Halifax and Middleton, while in New Brunswick the granite industries at St. George and at Hampstead were carried on with about the same success as in immediately preceding years.

The chief sources of the granite production of Quebec in 1906 were in Chatham township, Argenteuil county, and in Stanstead tp., Stanstead county. A small production was also obtained from Rivière à Pierre in Portneuf county.

In British Columbia granite was quarried on Nelson island about 52 miles north-west of Vancouver, and on Burrard inlet opposite Croker Fold.

The total value of the production in 1906 was \$278,419. Statistics of annual production since 1886 are shown in table 7.

TABLE 7.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF GRANITE.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.....	6,062	\$63,309	1896.	18,717	\$106,709
1887.....	21,217	142,506	1897.....	10,345	61,934
1888.....	21,352	147,305	1898.....	23,897	81,073
1889.	10,197	79,624	1899.....	13,418	90,542
1890.....	13,307	65,985	1900.....		80,000
1891.....	13,637	70,056	1901.....		155,000
1892.....	24,302	89,326	1902.....		210,000
1893.....	22,521	94,393	1903.....		200,000
1894.....	16,392	109,936	1904.....		150,000
1895.....	19,238	84,838	1905.....		226,305
			1906.....		278,419

SLATE.

Slate was quarried at the New Rockland quarries, Richmond county, Que., by Messrs. Fraser & Davies. The Pacific Slate Company of Victoria were making preparations to operate their quarry, but made no shipments during 1906. The total production was valued at \$24,416, and about the same quantity has been produced annually during the past four years.

Statistics of the production, exports, and imports of slate are shown in tables 8, 9 and 10.

TABLE 8.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF SLATE.

Calendar Year.	Tons.	Value.
1886.....	5,345	\$64,675
1887.....	7,357	89,000
1888.....	5,314	90,689
1889.....	6,935	119,160
1890.....	6,368	100,250
1891.....	5,000	65,000
1892.....	5,180	69,070
1893.....	7,112	90,825
1894.....		75,550
1895.....		58,900
1896.....		53,370
1897.....		42,800
1898.....		40,791
1899.....		33,406
1900.....		12,100
1901.....	715	9,980
1902.....		19,200
1903.....		22,040
1904.....		23,247
1905.....		21,568
1906.....		24,446

TABLE 9.
STRUCTURAL MATERIALS.
EXPORTS OF SLATE.

Calendar Year.	Tons.	Value.
1884.....	539	\$6,845
1885.....	346	5,274
1886.....	34	495
1887.....	27	373
1888.....	22	475
1889.....	26	3,303
1890.....	12	153
1891.....	15	195
1892.....	87	2,038
1893.....	178	3,168
1894.....	187	3,610
1895.....	36	574
1896.....	301	8,913
1897.....	Nil.	Nil.
1898.....	Nil.	Nil.
1899.....	Nil.	Nil.
1900.....	Nil.	Nil.
1901.....	16,750	10,000
1902 to 1906.....	Nil.	Nil.

TABLE 10.
STRUCTURAL MATERIALS.
IMPORTS OF SLATE.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$21,431	1893.....	\$51,179
1881.....	22,184	1894.....	29,267
1882.....	24,543	1895.....	19,471
1883.....	24,968	1896.....	24,176
1884.....	28,816	1897.....	21,615
1885.....	28,169	1898.....	24,907
1886.....	27,852	1899.....	33,100
1887.....	27,845	1900.....	53,707
1888.....	23,151	1901.....	72,187
1889.....	41,370	1902.....	72,601
1890.....	22,871	1903.....	84,437
1891.....	46,104	1904.....	86,057
1892.....	50,441	1905.....	93,228

		Duty.	
1906	{ Slate and manufactures of—		
	Mantels.....	30 %	
	Roofing slate.....	25 %	not over 75c. per square
	School writing slates.....	25 %	\$60,054
	Slate pencils.....	25 %	20,535
	Slate of all kinds and manufactures of, N.E.S.	30 %	3,329
	Total.....		29,023
			\$112,941

FLAGSTONES.

A small quantity of flagstone is annually quarried at Bishops Crossing, Que., and sold in Sherbrooke, Iberville, St. Johns, and St. Hyacinthe. The production in 1906 was 6,600 yards, superficial measure, valued at \$5,280.

Statistics of production and imports are shown in tables 11 and 12.

TABLE 11.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF FLAGSTONE.

Calendar Year.	Quantity, Sq. ft.	Value.
1886.....	70,000	\$ 7,875
1887.....	116,000	11,600
1888.....	64,800	6,580
1889.....	14,000	1,400
1890.....	17,865	1,643
1891.....	27,300	2,721
1892.....	13,700	1,869
1893.....	40,500	3,487
1894.....	152,700	5,298
1895.....	80,005	6,687
1896.....	.....	6,710
1897.....	.....	7,190
1898.....	.....	4,250
1899.....	.....	7,600
1900.....	.....	5,250
1901.....	.....	4,575
1902.....	87,300	7,760
1903.....	79,200	6,688
1904.....	75,600	6,720
1905.....	81,000	7,650
1906.....	59,400	5,280

TABLE 12.
STRUCTURAL MATERIALS.
IMPORTS OF FLAGSTONE.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
1881.....	23	\$ 241	1893.....	884	\$ 8,500
1882.....	90	848	1894.....	218	2,429
1883.....	10	99	1895.....	15	84
1884.....	137	1,158	1896.....	Nil.	Nil.
1885.....	205	1,756	1897.....	13	227
1886.....	1,602	9,443	1898.....	587	1,540
1887.....	1,316	10,966	1899.....	Nil.	Nil.
1888.....	2,642	21,077	1900.....	9	63
1889.....	1,669	15,451	1901.....	14	116
1890.....	5,665	48,995	1902.....	232	1,231
1891.....	3,770	36,348	1903 to 1906*.....	Nil.	Nil.
1892.....	1,571	15,048			

* Flagstones dressed. Duty, 20 %. (See table 3).

CEMENT.

The total sales of cement in 1906, including both natural and Portland, amounted to 2,128,374 barrels valued at \$3,170,859, as compared with 1,360,732 barrels valued at \$1,924,014 in 1905; an increase of 767,642 barrels or 56.4 p. c. in quantity, and \$1,246,845 or 64.8 p.

c. in total value. The production of Portland cement continues to show large annual increases, while the output of natural rock cement has fallen off to a few thousand barrels, the proportion of the total in 1906 being less than one-third of one per cent.

Statistics of production since 1887 are given in table 13 below :—

TABLE 13.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF CEMENT.

Calendar Year.	Natural Rock Cement.		Portland Cement.		Total.	
	Barrels.	Value.	Barrels.	Value.	Barrels.	Value.
		\$		\$		\$
1887.					69,843	81,909
1888.					50,668	35,593
1889.					90,474	69,790
1890.					102,216	92,405
1891.					93,473	108,561
1892.					117,408	147,663
1893.					158,597	194,015
1894.					108,142	144,637
1895.					128,294	173,675
1896.					149,090	201,651
1897.	85,450	65,893	119,763	209,380	205,213	275,273
1898.	87,125	73,412	163,084	324,168	250,209	397,580
1899.	147,357	119,308	255,366	513,983	396,753	633,291
1900.	125,428	99,994	292,124	562,916	417,552	662,910
1901.	133,328	94,415	317,066	565,615	450,394	660,030
1902.	127,931	98,932	594,594	1,028,618	722,525	1,127,550
1903.	92,252	74,655	627,741	1,150,592	719,993	1,225,247
1904.	56,814	50,247	910,358	1,287,992	967,172	1,338,239
1905.	14,184	10,274	1,346,548	1,913,740	1,360,732	1,924,014
1906.	8,610	6,052	2,119,764	3,164,807	2,128,374	3,170,859

NATURAL ROCK CEMENT.

Natural rock cement was made by two firms only, both in Ontario. The total sales during 1906 were 8,610 barrels valued at \$6,052, as compared with 14,184 barrels valued at \$10,274 in 1905. The prices realized at the works were 70 to 80 cents per barrel of 240 lbs. net. The extended use of Portland cement, and the preference shown for it by consumers seems, for the time at least, to be driving the natural rock product from the market.

Following is a list of firms owning plants, the first two of which only were operated during the year :—

Hamilton Cement Works.....	Hamilton, Ont.
Queenston Cement Works.....	Queenston, Ont.
Battle's Thorold Cement Works.....	Thorold, Ont.
The Toronto Lime Co.....	Toronto, Ont.
The Manitoba Union Mining Co., Ltd.....	Winnipeg, Man.

PORTLAND CEMENT.

The total quantity of Portland cement made in Canada in 1906 was 2,152,562 barrels, as compared with 1,541,568 barrels in 1905, an increase of 610,994 barrels, or 39·6 p. c. The total sales of Portland cement were 2,119,764 barrels, as compared with 1,346,548 barrels in 1905, an increase of 773,216 barrels or 57·4 p. c. Additional details will be found tabulated below.

Fifteen companies were operating plants during 1906, with a total daily capacity of about 10,500 barrels, viz., one in Nova Scotia, two in Quebec, eleven in Ontario, and one in British Columbia. At least four plants were under construction during the year, of which the total initial daily capacity will be about 4,700 barrels.

Detailed statistics of production in 1905 and 1906 are as follows :—

—	1905.	1906.
	Bls.	Bls.
Portland cement sold.....	1,346,548	2,119,764
Portland cement manufactured.....	1,541,568	2,152,562
Stock on hand January 1.....	111,446	*269,558
Stock on hand December 31.....	*306,466	302,356
Value of cement sold.....	\$1,913,740	\$3,161,807

*NOTE.—Some companies do not take stock at the end of the calendar year, consequently their estimates of stock on hand do not always agree from year to year.

The average price per barrel at the works in 1906 was \$1.49, as compared with \$1.42 in 1905.

The imports of Portland cement into Canada in 1906 were :—

—	Quantity.	Value.
Six months ending June.....cwt.	945,187	\$319,021
Six months ending December..... "	1,485,573	459,685
The year 1906..... "	2,430,760	\$778,706

This is equivalent to 694,503 barrels of 350 pounds each, at an average price per barrel of \$1.12. The duty is 12½c. per hundred pounds.

7-8 EDWARD VII., A. 1908

The imports in 1905 were equivalent to 917,558 barrels, valued at \$1,138,548, or an average price per barrel of \$1.24.

There is very little cement exported from Canada. The consumption is therefore practically represented by the Canadian sales, together with the imports.

Following is an estimate of the consumption of Portland cement in Canada for the past six years:—

Calendar Year.	Canadian.	Imported.	Total.
	Bls.	Bls.	Bls.
1901.....	317,066	555,900	872,966
1902.....	594,594	544,954	1,139,548
1903.....	627,741	773,678	1,401,419
1904.....	910,358	784,630	1,694,988
1905.....	1,346,548	917,558	2,264,106
1906.....	2,119,764	694,503	2,814,267

The exports and imports of cement are shown in tables 14 to 18 following. The exports of cement, as before remarked, are very small, the value in 1906 being \$7,551 only. The imports of cement are divided into three groups, of which the most important, Portland cement, amounted in 1906 to the equivalent of 694,503 barrels of 350 pounds net, valued at \$963,839. The other imports were hydraulic cement 10,794 cwt. valued at \$4,034, and cement not otherwise specified and manufactures of cement to the value of \$27,858. The imports of Portland cement showed a steady growth between 1895 and 1905; but began to decrease again in 1906. In 1903 and previous years there was more imported cement used than Canadian product. In 1904 and succeeding years the situation was changed, however, and more Canadian cement was used in Canada than imported, the proportion of imported Portland cement used in 1906 being about 24.6 p. c. of the total consumption.

SESSIONAL PAPER No. 26b

TABLE 14.
STRUCTURAL MATERIALS.
EXPORTS OF CEMENT.

Calendar Year.	Value.
1891.....	\$ 2,881
1892.....	938
1893.....	1,172
1894.....	482
1895.....	937
1896.....	1,328
1897.....	644
1898.....	2,117
1899.....	2,733
1900.....	3,296
1901.....	1,514
1902.....	2,267
1903.....	2,851
1904.....	5,494
1905.....	3,143
1906.....	7,551

TABLE 15.
STRUCTURAL MATERIALS.
IMPORTS OF CEMENT IN BULK OR BAGS.

Fiscal Year.	Bushels.	Value.	Fiscal Year.	Bushels.	Value.
1880.....	65	\$ 28	1893.....	12,534	\$ 2,909
1881.....	579	298	1894.....	9,027	2,618
1882.....	386	86	1895.....		2,112
1883.....	1,759	548	1896.....		3,672
1884.....	4,626	1,236	1897.....		4,318
1885.....	4,598	1,315	1898.....		3,263
1886.....	6,808	1,851	1899.....		8,929
1887.....	5,421	1,419	1900.....		10,452
1888.....	23,919	5,787	1901.....		4,890
1889.....	32,818	10,668	1902.....		12,234
1890.....	21,055	5,443	1903.....		16,281
1891.....	11,281	2,890	1904.....		14,305
1892.....	14,351	3,394	1905*		18,489
			1906*		27,858

* Cement, N.E.S., and manufactures of cement, Duty 20 per cent.

TABLE 16.
STRUCTURAL MATERIALS.
IMPORTS OF HYDRAULIC CEMENT.

Fiscal Year.	Barrels.	Value.
1880.....	10,034	\$ 10,306
1881.....	7,812	7,821
1882.....	11,945	13,410
1883.....	11,659	13,755
1884.....	8,606	9,514
1885.....	5,613	5,396
1886.....	6,164	6,028
1887.....	6,160	8,784
1888.....	5,636	7,522
1889.....	5,835	7,467
1890.....	5,440	9,048
1891.....	3,515	6,152
1892.....	2,214	2,782
1893.....	4,896	8,060
1894.....	1,054	985
1895.....	5,333	7,001
1896.....	5,688	8,948
1897.....	2,494	3,937
	Cwt.	
1898.....	16,033	7,097
1899.....	1,678	694
1900.....	10,418	4,711
1901.....	17,784	6,865
1902.....	29,585	17,755
1903.....	13,690	6,333
1904.....	12,088	5,391
1905.....	16,961	10,690
1906*	10,794	4,034

* Duty, 12½c. per 100 lbs.

TABLE 17.
STRUCTURAL MATERIALS.
IMPORTS OF PORTLAND CEMENT.

Fiscal Year.	Barrels.	Value.	Fiscal Year.	Barrels.	Value.
1880.....		\$ 55,774	1894.....	224,150	\$280,841
1881.....		45,646	1895.....	196,281	242,813
1882.....		66,579	1896.....	204,407	242,409
1883.....		102,537	1897.....	210,871	252,587
1884.....		102,857		Cwt.	
1885.....		111,521	1898.....	1,073,058	355,264
1886.....		120,398	1899.....	1,300,424	467,994
1887.....	102,750	148,054	1900.....	1,301,361	498,607
1888.....	122,402	177,158	1901.....	1,612,432	654,595
1889.....	122,273	179,406	1902.....	1,971,616	833,657
1890.....	192,322	313,572	1903.....	2,316,853	868,131
1891.....	183,728	304,648	1904.....	2,476,388	995,017
1892.....	187,233	281,553	1905.....	3,228,394	1,234,649
1893.....	229,492	316,179	1906*	2,848,582	963,839

* Duty, 12½c. per 100 lbs.

SESSIONAL PAPER No. 26b

TABLE 18.
STRUCTURAL MATERIALS.
PRODUCTION OF ROOFING CEMENT.

Fiscal Year.	Tons.	Value.
1890.....	1,171	\$ 6,502
1891.....	1,020	4,810
1892.....	800	12,000
1893.....	951	5,441
1894.....	815	3,978
1895.....		3,153
1896.....	86	430
1897 to 1906 inclusive.....	Nil.	Nil.

Following is a list of companies engaged in the manufacture of Portland cement during 1906 :—

Sydney Cement Co.....	Sydney, C.B.
Crescent Cement Works.....	Longue Point, Que.
International Portland Cement Co.....	Toronto, Ont., and Hull, Que.
Canadian Portland Cement Co.....	Deseronto, Ont.
Lakefield Portland Cement Co.....	Lakefield, Ont.
Imperial Portland Cement Co.....	Owen Sound, Ont.
Owen Sound Portland Cement Co., Ltd.....	"
Grey and Bruce Portland Cement Co., Ltd.....	"
Sun Portland Cement Co.....	"
Hanover Portland Cement Co.....	Hanover, Ont.
Belleville Portland Cement Co.....	Belleville, Ont.
Ontario Portland Cement Co.....	Brantford, Ont.
Raven Lake Portland Cement Co.....	Toronto and Victoria Road, Ont.
National Portland Cement Co.....	Toronto and Durham, Ont.
Vancouver Portland Cement Co.....	Victoria, B.C.

Companies with works in process of erection, and companies proposing to erect plants :—

Colonial Portland Cement Co.....	Warton, Ont.
Superior Portland Cement Co.....	Orangeville, Ont.
Standard Portland Cement Co.....	Toronto, Ont.
Lehigh Portland Cement Co.....	Belleville, Ont.
Manitoba Portland Cement Co.....	Winnipeg, Man.
Alberta Portland Cement Co.....	Calgary, Alta.
Western Canada Coal and Cement Co.....	Exshaw, Alta.

LIME.

Statistics of the production of lime in 1906 are more complete than have been available in past years. According to returns received, the total sales and shipments were 3,230,406 bushels valued at \$1,009,177. This simply represents the aggregate of the returns received, no allowance or estimate being made for the production of kilns not reported, of which there were undoubtedly a number.

By provinces the production was as follows :—

—	Bushels.	Value.
Nova Scotia.....	50,000	\$13,600
New Brunswick.....	405,450	94,290
Quebec.....	923,563	201,816
Ontario.....	2,885,000	496,785
Manitoba.....	620,201	119,792
Alberta.....	240,000	56,200
British Columbia.....	106,192	26,694
	5,230,406	\$1,009,177

The production of lime in Ontario as given above is as published by the Ontario Bureau of Mines. The production in all the other provinces are from direct returns collected by this Department.

Statistics of the production, exports, and imports of lime are shown in tables 19, 20, 21.

TABLE 19.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF LIME.

Calendar Year.	Value.	Calendar Year.	Value.
1886.....	\$283,755	1896 estimated.....	\$ 650,000
1887.....	394,859	1897 ".....	650,000
1888.....	339,951	1898 ".....	650,000
1889.....	362,848	1899 ".....	800,000
1890.....	412,308	1900 ".....	800,000
1891.....	251,215	1901 ".....	830,000
1892.....	411,270	1902 ".....	892,000
1893 estimated.....	900,000	1903 ".....	900,000
1894 ".....	900,000	1904 ".....	780,000
1895 ".....	700,000	1905 ".....	750,000
		1906 ".....	1,009,177

TABLE 20.
STRUCTURAL MATERIALS.
EXPORTS OF LIME.

Calendar Year.	Value.
1891.....	\$119,853
1892.....	121,535
1893.....	86,623
1894.....	83,670
1895.....	71,997
1896.....	70,820
1897.....	53,177
1898.....	49,594
1899.....	73,565
1900.....	80,852
1901.....	99,194
1902.....	116,009
1903.....	131,412
1904.....	73,838
1905.....	85,723
1906.....	57,072

TABLE 21.
STRUCTURAL MATERIALS.
IMPORTS OF LIME.

Fiscal Year.	Barrels.	Value.
1880.....	6,100	\$ 6,013
1881.....	5,796	4,177
1882.....	5,064	5,365
1883.....	7,623	9,224
1884.....	10,804	11,200
1885.....	12,072	11,503
1886.....	11,021	9,347
1887.....	10,835	8,524
1888.....	10,142	7,537
1889.....	13,079	9,363
1890.....	8,149	5,360
1891.....	6,259	4,273
1892.....	6,132	4,241
1893.....	6,879	4,917
1894.....	6,766	4,907
1895.....	12,008	5,743
1896.....	10,239	7,331
1897.....	16,108	10,529
1898.....	12,850	9,002
1899.....	15,720	11,124
1900.....	12,865	11,211
1901.....	19,657	14,534
1902.....	24,602	17,584
1903.....	31,108	22,470
1904.....	54,359	39,639
1905.....	98,676	71,588
1906..... Duty, 20 p. c.	134,334	93,630

CLAY PRODUCTS.

Chief amongst the clay industries is the manufacture of brick. Owing to the large number of manufacturers, and the indifference of many in the answering of circular inquiries, the statistics of production are more or less incomplete.

Returns received show total sales of clay brick of all grades during 1906 to be 523,390 thousand valued at \$4,102,590; as compared with 523,820 thousand valued at \$3,933,925 in 1905.

By provinces the sales in 1906 were :—

—	Number.	Value.	Average price per M.
Nova Scotia.....	16,591,500	\$99,536	\$5.999
New Brunswick.....	3,725,000	29,045	7.797
Quebec.....	66,193,636	535,531	8.090
Ontario.....	342,860,000	2,539,795	7.407
Manitoba.....	54,530,955	517,065	9.473
Saskatchewan.....	12,786,000	136,022	10.638
Alberta.....	18,036,951	180,217	9.991
British Columbia.....	8,616,110	65,379	7.587
	523,390,152	4,102,590	\$7.838

The production in Ontario as given above is as published by the Ontario Bureau of Mines. The production given for the other provinces represents the direct returns to this Department.

TABLE 22.
STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF BUILDING BRICKS.

Calendar Year.	M.	Value.
1886.....		\$ 873,600
1887.....		986,689
1888.....		1,036,746
1889.....		1,273,884
1890.....		1,266,982
1891.....		1,061,536
1892.....		1,251,934
1893.....		1,800,000
1894.....		1,800,000
1895.....		1,670,000
1896.....		1,600,000
1897.....		1,600,000
1898.....		1,900,000
1899.....		2,195,000
1900.....		2,275,000
1901.....		2,400,000
1902.....		2,593,000
1903.....		2,832,000
1904.....		2,983,000
1905.....	523,820	3,933,925
1906.....	523,390	4,102,590

TABLE 23.
STRUCTURAL MATERIALS.
EXPORTS OF BRICKS.

Calendar Year.	M.	Value.
1891.....	246	\$ 1,163
1892.....	1,963	12,192
1893.....	6,073	44,110
1894.....	1,095	7,405
1895.....	1,655	8,665
1896.....	983	5,678
1897.....	573	2,679
1898.....	65	442
1899.....	172	1,351
1900.....	546	4,528
1901.....	646	5,189
1902.....	2,110	12,786
1903.....	891	5,699
1904.....	696	5,357
1905.....	754	5,888
1906.....	697	6,541

TABLE 24.
STRUCTURAL MATERIALS.
IMPORTS OF BUILDING BRICKS.

Fiscal Year.	Value.
1880.....	\$ 2,067
1881.....	4,251
1882.....	24,572
1883.....	14,234
1884.....	20,258
1885.....	14,632
1886.....	5,929
1887.....	2,440
1888.....	20,720
1889.....	24,585
1890.....	12,500
1891.....	9,744
1892.....	5,075
1893.....	14,108
1894.....	18,320
1895.....	4,705
1896.....	23,189
1897.....	10,336
1898.....	6,652
1899.....	21,306
1900.....	19,305
1901.....	20,677
1902.....	33,802
1903.....	28,493
1904.....	117,468
1905.....	168,122
1906.....Duty, 20 p. c.	194,897

DEPARTMENT OF MINES

7-8 EDWARD VII., A. 1908

TABLE 25.
STRUCTURAL MATERIALS.
IMPORTS OF PAVING BRICK.*

Fiscal Year.	Value.
1898	\$ 2,337
1899	23,648
1900	35,644
1901	10,414
1902	16,788
1903	18,811
1904	29,753
1905	32,578
1906	46,008

*Duty 20 p. c.

TABLE 26.
STRUCTURAL MATERIALS.
PRODUCTION OF TERRA COTTA, ETC.

Calendar Year.	Value.	Calendar Year.	Value.
1888	\$ 49,800	1897	155,595
1889	Not available.	1898	167,902
1890	90,000	1899	220,258
1891	113,103	1900	259,450
1892	97,239	1901	278,671
1893	55,704	1902	276,241
1894	65,600	1903	405,796
1895	195,123	1904-1906	(a)
1896	83,855		

(a) Included in table 22.

TABLE 27.
STRUCTURAL MATERIALS.
PRODUCTION OF SEWER PIPES, ETC.

Calendar Year.	Value.
1888	\$266,320
1889	Not available.
1890	348,000
1891	227,300
1892	367,660
1893	350,000
1894	250,325
1895	257,045
1896	153,875
1897	164,250
1898	181,717
1899	161,546
1900	231,525
1901	243,115
1902	301,965
1903	317,970
1904	440,894
1905	382,000
1906	530,045

SESSIONAL PAPER No. 26b

TABLE 28.

STRUCTURAL MATERIALS.
IMPORTS OF DRAIN TILES AND SEWER PIPES.

Fiscal Year.		Value.
1880.		\$ 33,796
1881.		37,368
1882.		70,065
1883.		70,699
1884.		71,755
1885.		69,589
1886.		57,953
1887.		71,203
1888.		101,257
1889.		83,215
1890.		77,434
1891.		87,195
1892.		59,537
1893.		39,001
1894.		24,625
1895.		21,053
1896.		19,296
1897.		34,286
1898.		29,611
1899.		35,898
1900.		39,149
1901.		56,083
1902.		55,530
1903.		57,352
1904.		55,595
1905.		102,395
1906 { Drain tile, not glazed..... Drain pipes, sewer pipes, chimney linings or vents, chimney tops and inverted blocks, glazed or unglazed.....		Duty.
		20 %
		35 %
Total.....		\$ 4,727 131,353 \$136,080

TABLE 29.

STRUCTURAL MATERIALS.
ANNUAL PRODUCTION OF POTTERY.

Calendar Year.	Value.	Calendar Year.	Value.
1888.	\$ 27,750	1897.	\$129,629
1889.	Not available.	1898.	214,675
1890.	195,242	1899.	185,000
1891.	258,844	1900.	200,000
1892.	265,811	1901.	200,000
1893.	213,186	1902.	200,000
1894.	162,144	1903.	200,000
1895.	151,588	1904.	140,000
1896.	163,427	1905.	120,000
		1906.	150,000

DEPARTMENT OF MINES

7-8 EDWARD VII., A. 1908

TABLE 30.

STRUCTURAL MATERIALS.
IMPORTS OF EARTHENWARE.

Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$322,333	1893.....	\$709,737
1881.....	439,029	1894.....	695,514
1882.....	646,734	1895.....	547,935
1883.....	657,886	1896.....	575,493
1884.....	544,586	1897.....	595,822
1885.....	511,853	1898.....	675,874
1886.....	599,269	1899.....	916,727
1887.....	750,691	1900.....	959,526
1888.....	697,082	1901.....	1,114,677
1889.....	697,949	1902.....	1,275,093
1890.....	695,206	1903.....	1,406,610
1891.....	634,907	1904.....	1,611,356
1892.....	748,810	1905.....	1,636,214
Earthenware and china :—		Duty.	
Baths, tubs and washstands, of earthenware, stone		30 %	\$ 67,828
cement or clay, or of other material, N.O.P. . . .			
Brown or coloured earthen and stoneware, and		30 %	8,363
Rockingham ware.....			
Decorated, printed or sponged, and all earthenware,		30 %	191,552
N.E.S.		30 %	10,508
Demijohns, churns and crocks.....			
White granite or ironstone ware, C.C. or cream		30 %	47,960
coloured ware.....		30 %	956,064
Tableware of china porcelain or other clay.		30 %	214,013
China and porcelain ware		35 %	78,247
Earthenware tiles.....		30 %	117,824
Manufactures of earthenware, N.E.S.			
Total.....			1,692,359

TABLE 31.

STRUCTURAL MATERIALS.
EXPORTS OF SAND AND GRAVEL.

Calendar Year.	Tons.	Value.
		\$
1893.....	329,116	121,795
1894.....	324,656	86,940
1895.....	277,162	118,359
1896.....	224,769	80,110
1897.....	152,963	76,729
1898.....	165,954	90,498
1899.....	242,450	101,640
1900.....	197,558	101,666
1901.....	197,302	117,465
1902.....	159,793	119,120
1903.....	355,792	124,006
1904.....	399,809	129,803
1905.....	306,935	152,805
1906.....	336,550	139,712

INDEX

	PAGE.
Letter of Transmittal.....	3
Explanatory Notes.....	5
Introduction	7-13
Summary of Production.....	Opposite 14

METALLIC PRODUCTS.

Precious Metals—	
Gold.....	15-28
Silver	28-31
Copper.....	32-38
Iron.....	39-59
Lead.....	60-67
Nickel.....	68-70
Zinc.....	71-73
Miscellaneous Metallic—	
Aluminium.....	74
Antimony.....	74
Mercury.....	76
Platinum.....	77
Palladium	79
Tin.....	79

NON-METALLIC PRODUCTS.

Abrasive Materials—	
Corundum.....	81
Grindstones.....	82
Tripolite.....	87
Asbestos.....	88-91
Chromite.....	92-94
Coal and Coke.....	95-115
Peat.....	116
Graphite.....	117-119
Gypsum.....	120-124
Manganese	125
Mica.....	127
Mineral pigments—	
Ochres.....	131
Barytes.....	133
Mineral Water.....	135
Natural Gas.....	137
Petroleum	138-144
Phosphate.....	145
Pyrites.....	147
Salt.....	149

Miscellaneous Non-Metallic--

Arsenic.....	153
Chalk (imports).....	154
Whiting (imports).....	155
Feldspar.....	155
Fire-clay.....	156
Moulding Sand.....	157
Quartz	157
Soapstone and Talc.....	159

Structural Materials--

Building Stone.....	160
Marble	162
Granite.....	163
Slate.....	164
Flagstone.....	166
Cement.....	167-173
Lime.....	173
Clay Products.....	176-180
Sands and Gravel (exports).....	180

Can
5

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Canada Statistical Bureau
"Mining" Branch

CANADA
DEPARTMENT OF MINES
MINES BRANCH

HON. W. TEMPLEMAN, MINISTER; A. P. LOW, LL.D., DEPUTY MINISTER;
EUGENE HAANEL, PH.D., DIRECTOR.

ANNUAL REPORT

OF THE

DIVISION OF MINERAL RESOURCES AND STATISTICS

ON THE

MINERAL PRODUCTION OF CANADA

During the Calendar Years

1907 AND 1908

JOHN McLEISH, B.A.

Chief of the Division of Mineral Resources and Statistics



OTTAWA
GOVERNMENT PRINTING BUREAU
1910

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DEPARTMENT OF MINES
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No. 58

To Dr. EUGENE HAANEL,
Director of Mines Branch,
Department of Mines, Ottawa.

SIR,—I beg to hand you herewith a report giving complete and revised statistical information descriptive of the mining and metallurgical production in Canada during the calendar years 1907 and 1908, the reports for the two years having been combined in one volume owing to the delay in the completion of the material for the 1907 report.

Preliminary reports on the mineral production during these years were sent to press February 27, 1908, and February 25, 1909, respectively, and issued within the following week in each case; while special articles on the subjects of iron and steel, coal, coke and peat, asbestos, chromite, petroleum, natural gas and cement, included as parts of the present report, have previously been issued as separate bulletins.

The preparation of the statistics and reviews has been altogether the work of the Division of Mineral Resources and Statistics, with the exception of the reviews on coal, coke and peat, natural gas, petroleum, mineral water, mineral pigments, mica, pyrites, phosphate and salt, for the careful preparation of which we are indebted to Mr. T. C. Denis of the Mines Branch staff.

Free use has been made of the reports published by the provincial Bureaus of Mines in the preparation of the material for this report, due acknowledgment being given in each case to the proper authority, and we are particularly indebted to the Provincial Mineralogist for the Province of British Columbia for advance details of the mineral production in that Province.

Grateful acknowledgment is made of the hearty co-operation of the mine and smelter owners, who have, with few exceptions, cheerfully complied with our demands and furnished us with statistics and information regarding their operations.

I have the honour to be, Sir,
Your obedient servant,

(Signed) JOHN McLEISH.

DIVISION OF MINERAL RESOURCES AND STATISTICS,
December 13, 1909.

CONTENTS

	PAGE
LETTER OF TRANSMISSION	3
EXPLANATORY NOTES :—	
Definition of the terms “ton” and “year” used.....	7
Basis of valuation and compilation.....	7
MINERAL PRODUCTION OF CANADA—	
INTRODUCTION :—	
Summary of Production in Canada.....	9
Summary of Exports and Imports	15
Summary of Production in the respective Provinces.....	19
METALLIC ORES.	
SMELTER PRODUCTION :—	
Refined metals; nickel-copper matte, blister copper, copper matte, etc.; operating smelters.....	25
COPPER :—	
Production in Canada of copper contained in ore; copper recovered by smelters; prices, exports and imports; production in Nova Scotia, Quebec, Ontario, British Columbia, and Yukon; operating companies.....	33
GOLD :—	
Refined metal — Mine production in Canada 1858-1903. Production in Nova Scotia, Quebec, Ontario, Alberta, British Columbia, and Yukon; operating companies.....	46
IRON :—	
Iron ore: production in Canada, and by Provinces; list of operators; exports and imports	64
Pig iron and steel: production in Canada, and by Provinces; ferro-products; bounties; exports and imports; operating companies.....	72
LEAD :—	
Production in Canada; refined pig lead; prices, bounties, exports and imports; production in Ontario and British Columbia.....	99
NICKEL :—	
Production in Ontario; exports and imports; prices; monel metal.....	113
SILVER :—	
Production in Canada; prices; refined silver; production in Quebec, Ontario, British Columbia, and Yukon.....	119
ZINC :—	
Production; imports	138
MISCELLANEOUS :—	
Aluminium, antimony, cobalt, mercury, molybdenum, platinum, palladium, tin, and tungsten.....	141
NON-METALLIC PRODUCTS.	
ABRASIVE MATERIALS : PRODUCTION, EXPORTS AND IMPORTS :—	
Corundum : Ontario	153
Grindstone : Nova Scotia, and New Brunswick....	154
Tripolite : Nova Scotia.....	157
ASBESTOS :—	
Production in Quebec, prices, exports and imports; world's production; list of operators.....	159

CHROMITE :—	
Production in Quebec, exports ; consumption in United States ; world's production ; list of operators.....	163
COAL :—	
Production in Canada, exports and imports, consumption ; production in Nova Scotia, New Brunswick, Saskatchewan, Alberta, British Columbia, and Yukon ; labour statistics.....	170
COKE :—	
Production in Canada, exports and imports ; production in Nova Scotia, Alberta, and British Columbia.....	196
PEAT.....	201
GRAPHITE :—	
Production in Canada, exports and imports ; artificial graphite.....	205
GYPSUM :—	
Production in Canada, exports and imports ; production in Nova Scotia, New Brunswick, Ontario, and Manitoba ; operating companies.....	209
MANGANESE :—	
Production, exports and imports.....	215
MICA :—	
Production in Quebec and Ontario, exports ; consumption in United States.....	218
MINERAL PIGMENTS :—	
Ochres : production, exports and imports.....	222
Barytes : production and imports.....	224
MINERAL WATER :—	
Production, and imports.....	226
NATURAL GAS :—	
Production in Quebec, Ontario, and Alberta ; legislation regulating export.....	228
PETROLEUM :—	
Bounty ; production in Ontario ; production of oil refineries ; exports and imports...	233
PHOSPHATE :—	
Production in Quebec and Ontario ; exports.....	243
PYRITES :—	
Production in Quebec and Ontario ; exports ; imports of brimstone and sulphur...	246
SALT :—	
Production in Ontario ; exports, imports, and consumption ; operating companies....	249
MISCELLANEOUS :—	
Arsenic, calcium carbide, chalk and whiting, feldspar, fluorspar, magnesite, quartz, and talc.....	254
	<i>Structural Materials and Clay Products.</i>
CEMENT :—	
Production, exports, imports, consumption, operating companies.....	261
CLAY PRODUCTS :—	
Building, paving and ornamental brick ; fireclay, and fireclay products ; pottery, sewerpipe, tiles, etc.....	268
LIME :—	
Production by Provinces : exports and imports.....	275
SAND-LIME BRICK :—	
Production.....	278
SANDS AND GRAVELS :—	
Exports and imports.....	278
SLATE :—	
Production, exports and imports.....	279
STONE :—	
Building stone, granite, marble, and flagstone.....	280

EXPLANATORY NOTES.

The term ton, used throughout this report, signifies a ton = 2,000 pounds ; while the year referred to means the calendar year unless otherwise stated. The Government fiscal year formerly ended on the 30th of June ; but now terminates on the 31st of March. This change took place in 1907, hence the fiscal period ending March 31, 1907, covers only nine months.

Statistics of exports and imports given throughout this report are compiled from the reports of Trade and Navigation published by the Customs Department.

The term "production" used throughout this report may in general be interpreted as meaning the quantity sold or shipped. Mineral products mined or manufactured, but not sold or shipped at the end of the year, are not included as "production." An exception to this usage will be found in reference to pig iron, in which case the statistics of production represent the quantities made.

The values of the metallic minerals produced, whether refined in Canada or not, are calculated on the basis of the average market price of the metal for the current year in New York ; the value of non-metallic products being given as at the mine or point of shipment. This differs from the practice of the Ontario and Quebec Bureaus of Mines. The value adopted by these Bureaus for metallic products is the value of these products at the point of production, as given by the producers. In the case of nickel the value given by the Ontario Bureau of Mines in 1908 is equivalent to 44.1 per cent of the final value of the metal ; the value given to copper is 53.6 per cent of the final value ; while the value given to the silver is 86.7 per cent of the final value. The silver is all shipped from the mine as ore or concentrates ; while the nickel and copper are reduced at the mine by the operating companies to a high grade Bessemer matte. In British Columbia the custom of the Provincial Bureau of Mines is to value the lead at 90 per cent, the silver at 95 per cent, and the copper at 100 per cent of the average prices for the year in the New York metal market. The Provincial Bureau of Mines of Nova Scotia does not place a value upon the production, being content with publishing quantities only.

The calculation of the quantities of metal production is, however, another important example of lack of uniformity of method. This subject is referred to in the article on smelter production, and in the articles on copper and lead, etc., and need not be further discussed here.

It will be seen, therefore, that in comparing the statistics of mineral production published by different authorities it is very important to take into account the basis on which the figures are compiled, whether relating to quantity, or value, and to know whether or not, and to what extent, the statistics include the production of matte or metals from imported ores. The Province of Nova Scotia has a large iron and steel industry based to a large extent on imported iron ores; Quebec has an industry in the manufacture of aluminium based almost altogether on imported ores; while the iron smelting industry of Ontario is to a considerable extent based on both imported ores and fuels.

THE MINERAL PRODUCTION OF CANADA

During the Calendar Years

1907 AND 1908.

INTRODUCTION.

A tabulated statement of the mineral production of Canada in 1907 and 1908 will be found on a subsequent page.

The revised statistics show the total value of the production in 1908 to be \$85,927,802, as compared with a value of \$86,865,202 in 1907; indicating a decrease in 1908 of \$937,400, or a little over one per cent. A further analysis of the table will show a decrease in the value of the metallic production of over \$650,000; a decrease in the value of the production of structural materials and clay products, chiefly in brick and lime, of over \$1,150,000; and an increase in the value of *other non-metallic* products of over \$860,000.

The growth of the annual mineral production since 1886, the first year for which complete statistics for the whole of Canada are available, is shown herewith. During the first ten years between 1886 and 1895 the production a little more than doubled; while during the next ten year period, the production was increased more than threefold. During the last three years the increase has been a little over 20 per cent.

Annual Mineral Production in Canada since 1886.

Year.	Value of Production.	Value per Capita.	Year.	Value of Production.	Value per Capita.
	\$	\$ cts.		\$	\$ cts.
1886.....	10,221,255	2 23	1898.....	38,412,431	7 32
1887.....	10,321,331	2 23	1899.....	49,234,005	9 27
1888.....	12,518,894	2 67	1900.....	64,420,983	11 98
1889.....	14,013,113	2 96	1901.....	65,804,611	12 25
1890.....	16,763,353	3 50	1902.....	63,211,634	11 55
1891.....	18,976,616	3 92	1903.....	61,740,513	11 03
1892.....	16,623,415	3 39	1904.....	60,073,897	10 36
1893.....	20,035,082	4 04	1905.....	69,525,170	11 42
1894.....	19,931,158	3 98	1906.....	79,057,308	12 51
1895.....	20,505,917	4 05	1907.....	86,865,202	13 35
1896.....	22,474,256	4 38	1908.....	85,927,802	12 37
1897.....	28,485,023	5 49			

Despite the decrease in total value in 1908, the mining industry was undoubtedly more actively prosecuted during that year. It is true that the general business depression of the year is particularly reflected in the decreased production of the structural materials, as well as in the general fall in the prices of metals; nevertheless the actual production of metals, from the point of view of tonnage, was much greater in 1908. In fact, had the metals copper, silver, lead, and nickel, maintained as high average prices in 1908 as in 1907, the total production in Canada in 1908 would have been worth over \$8,000,000 more to the producers than was actually the case.

Comparative Statement of Mineral

PRODUCT.			1907.	
			Quantity.	Value. (d)
METALLIC.				\$
1	Antimony, ore.....	Tons.*	2,016	65,000
2	Antimony, refined.....	Lbs.	63,850	5,108
3	Cobalt (c).....	"		72,133
4	Copper.....	"	57,979,205	11,398,120
5	Gold.....	Ozs.	405,517	8,382,780
6	Pig iron from Canadian ore (b).....	Tons.	107,599	1,982,307
7	Iron ore (a).....	"	25,901	45,907
8	Lead.....	Lbs.	47,738,703	2,542,086
9	Nickel.....	"	21,189,793	9,535,407
10	Silver.....	Ozs.	12,779,799	8,348,659
11	Zinc ore.....	Tons.	1,573	49,100
Total value of metallic.....				42,426,607
NON-METALLIC.				
12	Arsenic.....	Tons.		47,303
13	Asbestos.....	"	62,130	2,484,767
14	Asbestic.....	"	28,296	20,275
15	Calcium carbide.....	"		
16	Chromite.....	"	7,196	72,901
17	Coal.....	"	10,511,426	24,381,842
18	Corundum.....	"	1,892	177,922
19	Feldspar.....	"	12,584	29,819
20	Graphite.....	"	579	16,000
21	Graphite, artificial.....	"	204	
22	Grindstones.....	"	5,414	60,376
23	Gypsum.....	"	485,921	646,914
24	Limestone used as flux.....	"	395,503	298,097
25	Magnesite.....	"		
26	Manganese ore.....	"	1	22
27	Mica.....	"	774	312,599
Mineral pigments :—				
28	Barytes.....	"	1,344	3,000
29	Ochres.....	"	5,828	35,570
30	Mineral water.....			126,020
31	Natural gas.....			815,032
32	Peat.....	Tons.	50	200
33	Petroleum.....	Bls.	778,872	1,057,088
34	Phosphate.....	Tons.	824	6,018
35	Pyrites.....	"	46,243	212,491
36	Quartz.....	"	56,585	124,148
37	Salt.....	"	72,697	342,315
38	Talc.....	"	1,534	4,602
39	Tripolite.....	"	30	225
Total.....				31,275,546

Production for Years 1907 and 1908.

1908.		Increase (+) or Decrease (-)		Increase (+) or Decrease (-)			
Quantity.	Value. (d)	Quantity.	%	Value.	%		
	\$			\$			
148a	5,443a	- 1,868	92·66	- 59,557	91·63	1	
	113,423			+	41,290	2	
63,702,873	8,413,876	+ 6,723,668	11·80	- 2,984,244	57·24	3	
476,112	9,842,105	+ 70,595	17·41	+	1,459,325	4	
99,420	1,664,302	- 8,179	7·78	- 318,005	17·41	5	
					16·04	6	
43,195,733	1,814,221	- 4,542,970	9·52	- 727,865	28·63	7	
19,143,111	8,231,538	- 2,046,682	10·35	- 1,303,869	13·67	8	
22,106,233	11,686,239	+ 9,326,434	72·98	+	3,337,580	9	
452	3,215	- 1,121	71·27	- 45,885	39·98	10	
					93·45	11	
	41,774,362			- 652,245	1·54		
	58,566			+	11,263	12	
66,548	2,555,361	+ 4,418	7·11	+	70,594	13	
24,225	17,974	- 4,071	14·39	- 2,301	8·81	14	
6,864	417,150					15	
7,225	82,008	+ 29	0·29	+	9,107	16	
10,886,311	25,194,573	+ 354,885	3·38	+	812,731	17	
1,089	100,393	- 803	42·44	- 77,523	22·95	18	
7,877	21,099	- 4,707	37·40	- 8,720	34·20	19	
251	5,565	- 328	56·65	- 10,435	65·22	20	
214		+ 10	4·17			21	
3,843	48,128	- 1,571	29·02	- 12,248	20·29	22	
340,964	575,701	- 144,957	29·83	- 71,213	11·61	23	
418,661	289,705	+ 23,158	5·86	- 8,392	2·82	24	
120	840					25	
						26	
436	139,871	- 338	43·67	- 172,728	55·26	27	
4,312	19,021	+ 2,968	220·83	+	16,021	534·03	28
4,746	30,440	- 1,082	18·57	- 5,130	14·42	29	
	151,953			+	25,933	20·58	30
	1,012,660			+	197,628	24·25	31
60	180	+ 10	20·00	- 20	10·00	32	
527,987	747,102	- 260,885	33·07	- 309,986	29·33	33	
1,596	14,794	+ 772	93·69	+	8,776	145·83	34
47,336	224,824	+ 1,093	2·37	+	12,333	5·80	35
44,741	52,830	- 11,844	20·93	- 71,318	57·45	36	
79,975	378,798	+ 7,278	10·01	+	36,483	10·66	37
1,016	3,043	- 518	33·77	- 1,554	33·77	38	
30	195			- 30	13·83	39	
	32,142,784			+	867,238	2·77	

Comparative Statement of Mineral Production

PRODUCT.			1907.	
			Quantity.	Value.
<i>Structural Material and Clay Products.</i>				\$
40	Cement, natural.	Bls.	5,775	4,043
41	Cement, Portland.	"	2,436,093	3,777,328
Clay products :—				
42	Bricks, common.	No.	439,015,556	3,455,524
43	" pressed.	"	78,922,092	794,722
44	" paving.	"	3,617,720	72,354
45	" moulded and ornamental.	"		47,288
46	Fireclay, and fireclay products.			131,322
47	Fireproofing and architectural terra-cotta, etc.			89,389
48	Pottery.			253,809
49	Sewer pipe.			667,100
50	Tiles, drain.			260,609
51	Lime.	Bus.	4,755,316	974,595
52	Sand-lime brick.	No.	16,492,971	167,795
53	Sand and gravels (a).	Tons.	298,095	119,853
54	Slate.	Squares.	4,335	20,056
Stone :—				
55	Building stone.			1,830,000
56	Flagstones.	Sq. yds.	3,000	2,550
57	Granite.	Tons.	151,136	194,712
Total Structural Material and Clay Products.				12,863,049
Estimated for mineral products not reported.				300,000
Grand Total.				86,865,202

(a) Exports.

* Short tons throughout. (a) Exports. (b) Only the quantity and value of pig iron in 1907 was 651,962 tons, valued at \$9,125,226, and in 1908, 530,835 tons, valued at \$8,111,194. nickel, and silver are valued at the final average value of those metals in the New York metal 65.327 cents per ounce. For 1908 the average values were : copper 13.208 cents, lead 4.200 cents, metallic products are valued at their shipping values.

for Years 1907 and 1908—*Continued.*

1908.		Increase (+) or Decrease (-)		Increase (+) or Decrease (-)	
Quantity.	Value.	Quantity.	%	Value.	%
	\$			\$	
1,044	815	- 4,731	81.92	- 3,228	79.84
2,665,289	3,709,139	+ 229,196	9.41	- 68,189	1.84
408,305,768	2,982,255	- 30,709,788	7.00	- 473,269	13.70
53,480,764	517,180	- 25,441,328	32.24	- 277,542	34.92
3,719,961	59,456	+ 102,241	2.83	- 12,898	17.83
.....	18,535	.....	.....	- 28,753	60.80
.....	110,302	.....	.....	- 21,020	16.01
.....	170,211	.....	.....	+ 80,822	90.42
.....	200,541	.....	.....	- 53,268	20.99
.....	514,362	.....	.....	- 152,738	22.90
20,100,261	298,561	.....	.....	+ 37,952	14.56
3,601,468	712,947	- 1,153,848	24.26	- 261,648	26.85
17,288,260	152,856	+ 795,289	4.82	- 14,939	8.90
298,954	161,387	+ 859	0.29	+ 41,534	3.47
2,950	13,496	- 1,385	31.95	- 6,560	32.71
.....	1,800,000	.....	.....	- 30,000	1.64
6,800	6,293	+ 58,200	.....	+ 3,743	44.99
.....	282,320	.....	.....	+ 87,608	32.71
.....	11,710,656	.....	.....	- 1,152,393	8.96
.....	300,000	.....	.....	.....	.....
.....	85,927,802	.....	.....	- 937,400	1.079

attributed to Canadian ore are here given. The total production of pig iron in Canadian furnaces (c) Value received by shippers of silver-cobalt ores for cobalt contents. (d) The metals copper, lead, market, namely, for 1907 : copper 20.004 cents, lead 5.325 cents, nickel 45 cents per pound ; silver nickel 43 cents per pound ; and silver 52.864 cents per ounce. The other metallic, and the non-

A comparison of average monthly prices of metals in 1907 and 1908, as quoted by the Engineering and Mining Journal of New York, showing the decreases in 1908 both in price and percentage, is given hereunder.—

Comparison of Prices of Metals, 1907 and 1908.

	1907.	1908.	Decrease in 1908.	Percentage of Decrease.
	Cts.	Cts.	Cts.	%
Copper.	20·004	13·208	6·796	33·97
Lead.	5·325	4·200	1·125	21·12
Nickel.	45·000	43·000	2·000	4·44
Silver.	65·327	52·864	12·463	19·07
Spelter.	5·962	4·726	1·236	20·73
Tin.	38·166	29·465	8·701	22·79

The outstanding feature of the mining industry during 1908 was undoubtedly the silver production, a total increase of over 72 per cent being shown in the number of ounces produced. The metals copper and gold also show important increases in quantity produced; while iron, lead, and nickel were produced in slightly smaller quantity than in 1907.

In the non-metallic class decreases in gypsum and petroleum are more than counterbalanced by increases in coal, asbestos, natural gas, salt, etc. The Portland cement industry shows a small increase in sales and a large increase in quantity of cement made, with large stocks on hand at the close of the year.

Of the total production in 1908, \$41,774,362, or 48·62 per cent, is credited to the metallic ores; \$11,710,656, or about 13·63 per cent, to structural materials and clay products; and \$32,142,784, or 37·41 per cent, to the other non-metallic products; \$300,000, or 0·34 per cent, being credited to mineral products not reported.

The chief items contributing to the total are the metals gold, copper, nickel, silver, lead, and iron; coal, petroleum and natural gas, asbestos, cement, stone, the clay products and lime. These account for from 95 per cent to 97 per cent of the total production.

The relative importance in value of output of the different products contributing to the total mineral production in 1907 and 1908 is shown in the following table:—

Proportionate Value of Different Mineral Products, 1907 and 1908.

1907. — Products.	Per cent of total.	1908. — Products.	Per cent of total.
1 Coal.....	28·07	1 Coal.....	29·32
2 Copper.....	13·12	2 Silver.....	13·60
3 Nickel.....	10·98	3 Gold.....	11·45
4 Gold.....	9·65	4 Copper.....	9·79
5 Silver.....	9·61	5 Nickel.....	9·58
6 Clay products.....	6·56	6 Clay products.....	5·67
7 Portland cement.....	4·35	7 Portland cement.....	4·32
8 Lead.....	2·93	8 Asbestos and asbestic.....	2·99
9 Asbestos and asbestic.....	2·88	9 Building stone.....	2·42
10 Building stone.....	2·33	10 Lead.....	2·11
11 Pig iron.....	2·28	11 Pig iron.....	1·94
12 Petroleum.....	1·22	12 Natural gas.....	1·18
13 Lime.....	1·12	13 Petroleum.....	0·87
14 Natural gas.....	0·94	14 Lime.....	0·83
15 Gypsum.....	0·74	15 Gypsum.....	0·67
16 Salt.....	0·39	16 Calcium carbide.....	0·49
17 Mica.....	0·35	17 Salt.....	0·44
18 Limestone (as flux).....	0·34	18 Limestone (as flux).....	0·34
19 Pyrites.....	0·24	19 Pyrites.....	0·26
20 Sundries under 1 per cent.....	1·90	20 Sundries under 1 per cent.....	1·73

The relative importance of the various items is clearly set forth in the table, and does not require special reference, except as regards pig iron. From a metallurgical point of view the production of pig iron and steel is a much more important industry than is here set forth, ranking probably in second place; but as a large proportion of the iron is made from imported ore, only the quantity that may be attributed to Canadian ore has been included in these general tables. Complete details of the production of iron and steel will be found in the chapter on that subject.

EXPORTS AND IMPORTS.

A very large portion of the mineral production of Canada is exported for refining and manufacturing to the United States, and other countries; manufactured mine products being re-imported for our consumption.

The following tables of exports and imports have been compiled from the Trade and Navigation Reports of the Customs Department. The exports of the various products of the mine during the calendar years 1907 and 1908 are shown in the first table, the total value being close to \$40,000,000 in each year. The second table shows the exports during the fiscal years, classified according to destinations. It will be seen that in the fiscal year 1907-8 the United States took 90 per cent of the whole, and Great Britain about 4 per cent, the balance being distributed among about 27 other countries:—

Exports of the Products of the Mine—Calendar Years 1907 and 1908.

	1907		1908	
	Quantity.	Value.	Quantity.	Value.
		\$		\$
Arsenic.....Lbs.	613,504	10,850	1,913,732	43,493
Asbestos.....Tons	56,753	1,669,299	61,210	1,842,763
Barytes.....Cwt.	550	2,750	3,509	13,690
Chromite.....Tons	892	19,800	4,571	56,864
Coal....."	1,894,074	4,879,564	1,729,833	4,661,377
Feldspar....."	12,068	37,932	9,524	34,045
Gold.....Tons	375,026	8,029,603	280,091	7,740,918
Gypsum.....Tons	54,651,452	424,794	51,136,371	324,574
Copper, fine, in ore, etc.....Lbs.	36,998	8,742,133	5,934,559	5,934,559
" black or coarse in pig....."	21,978,177	7,476		
Lead in ore, etc....."	3,613,796	865,941	4,511,931	153,394
" in pig, etc....."	19,376,335	163,957	13,942,663	469,060
Nickel in ore, etc....."	14,813,735	2,280,374	19,419,893	1,866,624
Silver in ore, etc.....Ozs.	242	9,941,849	20,884,451	12,403,482
Platinum in ore concentrates, etc....."	1,117,010	4,864	43	937
Mica.....Lbs.	382,624	422,172	580,195	198,839
Mineral pigments....."	2,877	10,043	249,635	4,850
Mineral water.....Gals.		1,913	8,953	3,659
Oil—				
Crude....."	1,125	102		
Refined....."	3,132	575	296	71
Ores—				
Antimony.....Tons	1,327	37,807	148	5,443
Iron....."	25,901	45,907	4,334	72,260
Manganese....."	1	22		
Other ores....."	11,232	428,250	13,910	509,779
Phosphate....."			1	30
Plumbago.....Cwt.	2,415	3,036	7,706	10,158
Pyrites.....Tons	25,056	80,139	17,283	96,600
Salt.....Lbs.	2,222,542	7,709	529,229	3,840
Sand and gravel.....Tons	298,095	119,853	298,954	161,387
Slate....."			10,709	2,539
Stone, ornamental....."	153	1,262	1,314	28,777
" building....."	225	1,825	4,009	14,034
" for mfg. of grindstones....."	460	5,154	661	5,991
Other products of the mine.....		190,720		176,007
Manufactures—				
Bricks.....M.	802	6,193	2,344	9,047
Aluminium in bars, etc.....Lbs.	5,478,203	1,109,353	1,713,800	399,735
" manufactured....."		1,499		1,727
Cement....."		9,618		34,591
Clay, manufactures of....."		369		92
Coke.....Tons	70,617	320,357	58,708	248,759
Grindstones manufactured....."		32,534		13,730
Gypsum, ground....."		557		9,765
Iron and steel—				
Stoves.....No.	698	8,077	651	8,258
Castings, N.E.S....."		33,595		28,062
Pig iron.....Tons	439	13,504	290	10,614
Machinery (Linotype)....."		33,926		126,590
" N.E.S....."		436,793		285,257
Sewing machines.....No.	4,193	77,232	9,697	109,002
Typewriters....."	5,430	163,719	3,720	169,939
Hardware, tools, etc....."		48,909		57,631
" N.E.S....."		128,417		59,304
Scrap iron and steel.....Cwt.	229,229	185,430	92,566	73,807
Steel and mfg. of....."		477,766		1,169,674
Lime....."		55,903		43,316
Metals, N.O.P....."		63,700		65,360
Plumbago, mfg. of....."		2,847		876
Stone, ornamental....."		3,576		13,748
" building....."		657		1,446
		41,652,206		39,780,734

Exports Showing Destination of Mine Products During the Fiscal Years
1906-7 and 1907-8.

Destination.	1906. (9 months). Value.	1907. Value.	Destination.	1906. (9 months). Value.	1907. Value.
	\$	\$		\$	\$
United States.....	24,067,112	35,219,840	New Zealand	2,951	22,793
Great Britain.....	1,127,267	1,560,842	Argentina.....	2,882	8,445
Belgium.....	332,389	627,506	Austria-Hungary....	600	1,500
Newfoundland.....	267,044	421,995	Hong Kong.....	350	183,017
China.....	112,181	419,576	Holland.....	262	5,253
Bermuda.....	50,381	72,686	Spain.....	186	393
France.....	45,003	60,886	Cape Verde islands..		12,792
Mexico.....	35,478	70,941	Philippines.....		7,550
Germany.....	34,756	33,748	Egypt.....		6,717
Japan.....	28,048	207,872	Russia.....		3,985
Cuba.....	21,465	61,304	Chili.....		1,250
British Africa.....	20,217	28,039	Switzerland.....		385
St. Pierre.....	17,549	28,321	British Possessions(all other).....		25
West Indies.....	15,529	28,857			
Australia.....	5,807	58,560			
Italy.....	4,498	22,055	Total.....	26,191,955	39,148,813

It will be observed also in the first table, that the metals and metal products form about 80 per cent, and coal alone about 15 per cent of the total exports.

There is only one metal refinery in Canada, viz., at Trail, B.C., at which fine gold, fine silver, and refined pig lead are being produced (the erection of a refinery at the Ottawa Branch of the Royal Mint now provided for will perhaps create a market for some of Ontario's silver production), but at present, the great bulk of the products of the metallurgical furnaces of this Province, as well as of Ontario, is shipped to the United States for refining.

Similar conditions prevail with respect to many of our non-metallic mineral products: asbestos, gypsum, mica, corundum, feldspar, etc., which are largely exported either for refining, or for consumption abroad.

Statistics of imports of minerals and mineral products during the fiscal period of nine months ending March 31, 1907, and the 12 months ending March 31, 1908, are shown in the next two tables.

Since we export nearly all of our metallic products, it naturally follows, that we are compelled to import a large value in metals and their manufactures. The total value of the imports in 1908 was over \$124,000,000, and of this about 50 per cent is made up of iron and steel products; 15 per cent of other metallic products, and about 25 per cent of coal and coke.

IMPORTS.

Minerals and Mineral Products for Fiscal Period of nine Months 1906-7.

Products.	Value.	Products.	Value.
Alumina.....	\$206,181	Litharge.....	\$49,183
Alum.....	26,905	Lithographic stone.....	8,698
Aluminium.....	239,103	Manganese, oxide of.....	11,087
Antimony.....	51,881	Magnesia.....	9,494
" salts.....	19,612	Marble and Mfs. of.....	176,450
Arsenic.....	6,116	Mercury.....	45,662
Asbestos and Mfs. of.....	127,509	Metallic alloys—	
Asphaltum.....	239,811	Babbit metal.....	46,937
Bells and gongs.....	74,729	Brass and Mfs. of.....	1,834,014
Bismuth.....	5,926	Britannia metal.....	25,331
Blast furnace slag.....	1,870	German silver.....	67,658
Borax.....	73,820	Type metal.....	1,987
Bricks and tiles.....	421,501	Mineral and bituminous substances	
" fire.....	349,185	N. E. S.....	50,773
Burrstones.....	245	Mineralogical specimens.....	562
Cement.....	540,006	Mineral and metallic pigments,	
Chalk, feldspar, etc.....	24,822	paints and colours.....	942,524
Clays.....	178,240	Mineral water.....	143,416
Coal.....	17,543,574	Nickel.....	68,141
Coal tar and coal pitch.....	114,071	Ores of metals, N. E. S.....	1,869,268
Coke.....	1,132,680	Paraffin wax.....	5,922
Copper and Mfs. of.....	3,066,571	" candles.....	5,088
Cryolite.....	35,360	Petroleum and products of.....	1,318,139
Crucibles, clay or plumbago.....	27,271	Phosphate (fertilizer).....	30,950
Chloride of lime.....	52,113	Phosphorus.....	1,415
Earthenware.....	1,422,880	Platinum and Mfs. of.....	113,485
Electric carbons.....	105,558	Precious stones.....	1,218,338
Emery.....	61,584	Pumice.....	5,745
Flint, quartz, etc.....	50,636	Salt.....	299,394
Fullers earth.....	4,483	Saltpetre.....	60,948
Gold and silver and Mfs. of.....	1,461,721	Sand and gravels.....	177,412
Graphite and Mfs. of.....	33,562	Slate and Mfs. of.....	95,520
Gypsum, plaster of Paris, etc.....	83,393	Stone and Mfs. of.....	432,771
Iron and steel—		Sulphate of copper.....	118,800
Pigs, scraps, blooms, etc.....	3,366,638	" iron.....	2,061
Rolled bars, plates, etc.....	13,037,043	Sulphur.....	277,439
Ferro silicon and Ferro-manganese		Sulphuric acid.....	6,901
etc.....	610,875	Tin and Mfs. of.....	2,719,813
Manufactures of machinery, hard-		Whiting.....	33,153
ware, etc.....	24,320,291	Zinc and Mfs. of.....	411,529
Kainite.....	5,647		
Lead and Mfs. of.....	416,793	Total.....	82,294,090
Lime.....	67,573		

IMPORTS.

Minerals and Mineral Products for Fiscal Year 1907--8.

Products.	Value.	Products.	Value.
Alumina.....	\$221,130	Litharge.....	\$90,785
Alum.....	40,818	Lithographic stone.....	3,723
Aluminium.....	168,969	Manganese, oxide of.....	17,863
Antimony.....	49,648	Magnesia.....	8,300
" salts.....	16,836	Marble and Mfs. of.....	287,587
Arsenic.....	7,531	Mercury.....	76,549
Asbestos.....	190,980	Metallic alloys—	
Asphaltum.....	327,407	Babbit metal.....	38,965
Bells and gongs.....	101,210	Brass and Mfs. of.....	2,173,349
Bismuth.....	6,416	Britannia metal.....	38,263
Blanc fixe and satin white.....	10,707	German silver, nickel and nickel	
Blast furnace slag.....	33,367	silver.....	146,632
Borax.....	114,880	Type metal.....	6,454
Bricks and tiles.....	440,209	Mineral and bituminous substances	80,102
" fire.....	639,347	Minerals and metallic pigments,	
Burrstones.....	3,396	paints and colours.....	1,254,679
Cement.....	871,169	Mineral water, including aerated	
Chalk, feldspar, etc.....	96,589	waters.....	206,408
Clays.....	267,720	Nickel anodes.....	36,870
Coal.....	29,043,398	Ores of metals, N. E. S.....	2,832,548
Coal tar and coal pitch.....	272,531	Paraffin wax.....	8,041
Coke.....	2,166,036	" candles.....	20,035
Copper and Mfs. of.....	3,363,657	Petroleum and products of.....	2,006,019
Cryolite.....	34,617	Phosphate (fertilizer).....	27,955
Crucibles, clay or plumbago.....	40,092	Platinum and Mfs. of.....	60,390
Chloride of lime.....	82,760	Precious stones.....	1,716,010
Earthenware.....	2,190,784	Pumice.....	8,917
Electric carbons.....	173,365	Salt.....	430,219
Emery.....	83,919	Saltpetre.....	97,725
Flint and quartz, etc.....	59,248	Sand and gravels.....	223,043
Fullers earth.....	6,834	Slate and Mfs. of.....	131,083
Fossils.....	478	Stone and Mfs. of.....	511,780
Gold and silver Mfs. of.....	2,728,792	Sulphate of copper.....	146,028
Graphite and Mfs. of.....	34,458	" iron.....	1,664
Gypsum, plaster of Paris, etc.....	89,619	Sulphur and phosphorus.....	521,675
Iron and steel—		Sulphuric acid.....	7,582
Pig iron.....	3,493,600	Tin and Mfs. of.....	4,061,898
Ferro-silicon, etc.....	612,062	Whiting.....	63,499
All other iron and steel.....	57,714,036	Zinc and Mfs. of.....	534,903
Kainite.....	8,624	Total.....	124,388,109
Lead and Mfs. of.....	603,716		
Lime.....	99,611		

PRODUCTION BY PROVINCES.

A summary of the mineral production by provinces in 1908 is shown in the accompanying tables; in the first of which the total production in the several provinces and the percentage of each is given for both 1907 and 1908.

It will be observed that the largest production during each of the past two years has been from the Province of Ontario: British Columbia occupying second place. These two provinces together, contributed about 63 per cent of the total in 1908.

Mineral Production by Provinces, 1907 and 1908.

Province.	1907.		1908.	
	Value of Production.	Per cent of total.	Value of Production.	Per cent of total.
	\$	%	\$	%
Nova Scotia.....	14,532,040	16.73	14,487,108	16.86
New Brunswick.....	664,467	0.77	579,816	0.68
Quebec.....	6,205,553	7.14	6,743,650	7.85
Ontario.....	30,381,638	34.98	30,623,812	35.64
Manitoba.....	898,775	1.03	584,374	0.68
Saskatchewan.....	533,251	0.61	413,212	0.48
Alberta.....	4,657,524	5.36	5,122,505	5.96
British Columbia.....	25,656,056	29.54	23,704,035	27.58
North West Territories.....	3,335,898	3.84	3,669,290	4.27
Dominion.....	86,865,202	100.00	85,927,802	100.00

Mineral Production of Nova Scotia, 1908.

Product.	Quantity.	Value.
		\$
Gold.....	Ozs. 11,842	244,799
Pig iron from Canadian ore (b).....	Tons. 3,280	60,923
Coal.....	6,652,539	13,364,476
Grindstones.....	" 473	4,803
Gypsum.....	" 234,455	230,433
Limestone (used as flux).....	" 301,180	212,362
Barytes.....	" 4,312	19,021
Tripolite.....	" 30	195
Clay products.....		117,333
Lime.....	Bus. 51,068	16,102
Other products (a).....		216,161
Total.....		14,487,108

(a) Includes antimony, copper, arsenic, cement and stone.

(b) The total production of pig iron in Nova Scotia in 1908 was 352,642 tons valued at \$3,554,540.

Mineral Production of New Brunswick, 1908.

Product.	Quantity.	Value.
		\$
Coal	Tons. 60,000	135,000
Grindstones.	" 3,370	43,325
Gypsum.	" 81,620	191,312
Mineral water		14,894
Clay products.		75,513
Lime.	Bus. 34,262	34,262
Other products (a)		85,510
Total.		579,816

(a) Includes graphite, stone, etc.

Mineral Production of Quebec, 1908.

Product.	Quantity.	Value.
		\$
Copper.....	Lbs. 1,282,024	169,330
Pig iron from Canadian ore (b).....	Tons. 5,229	133,492
Silver.	Ozs. 13,299	7,030
Asbestos and asbestic.	Tons. 90,773	2,573,335
Chromite.....	" 7,225	82,008
Magnesite.....	" 120	840
Mica.....	" 148	82,613
Ochres.	" 4,746	30,440
Mineral water.....	"	75,533
Phosphate.	" 598	5,900
Pyrites.....	" 26,598	159,588
Cement.	Bls. 704,492	984,350
Clay products.		1,264,418
Lime.	Bus. 857,700	201,357
Flagstones.	Sq. yds.	6,293
Granite.....		167,085
Slate.....	Squares.	13,496
Other products (a)		786,542
Total.		6,743,650

(a) Includes graphite, limestone (flux), building stone and calcium carbide.

(b) The total production of pig iron in Quebec in 1908 was 6,709 tons valued at \$171,383.

There was also in this Province an important production of aluminium from imported ores.

Mineral Production of Ontario, 1908.

Product.		Quantity.	Value.
			\$
Copper	Lbs.	15,005,171	1,981,883
Gold	Ozs.	3,212	66,389
Pig iron from Canadian ore (b).....	Tons.	90,911	1,469,887
Nickel.....	Lbs.	19,143,111	8,231,538
Cobalt			113,423
Silver.....	Ozs.	19,398,545	10,254,847
Zinc ore	Tons.	452	3,215
Arsenic, white (716 tons) and arsenical ore.....	"		42,566
Calcium carbide.....	"	2,364	147,150
Corundum.....	"	1,089	100,398
Feldspar	"	7,877	21,099
Graphite	"	210	5,040
Gypsum.....	"	10,380	42,456
Limestone (as flux).....	"	114,837	75,966
Mica	"	288	57,258
Mineral water.....			61,526
Natural gas.....			949,297
Petroleum.....	Bls.	527,987	747,102
Phosphate.....	Tons.	998	8,894
Pyrites.....	"	20,738	65,236
Quartz	"	44,741	52,530
Salt	"	79,975	378,798
Talc.....	"	1,016	3,048
Cement	Bls.	1,519,930	1,910,630
Clay products			2,461,416
Lime	Bus.	2,087,731	358,507
Building stone and granite			693,850
Other products (a).....			319,563
Total			30,623,812

(a) Includes sand-lime brick, sand and gravel (exports), peat, etc. (b) The total production of pig iron in Ontario in 1908 was 271,484 tons valued at \$4,385,271.

Mineral Production in Manitoba, 1908.

Product.		Quantity.	Value.
			\$
Gypsum.....	Tons.	14,500	111,500
Clay products.....			265,091
Lime	Bus.	138,786	24,192
Cement	Bls.	11,234	16,851
Sand-lime brick	No.	2,645,000	21,740
Other products (e).....			145,000
Total			584,374

(e) Includes building stone, etc.

Mineral Production in Saskatchewan, 1908.

Product.	Quantity.	Value.
		\$
Coal..... Tons.	150,566	253,790
Brick..... No.	8,262,996	87,566
Other products (a).....		71,856
Total		413,212

(a) Includes building stone, sand-lime brick, etc.

Mineral Production in Alberta, 1908.

Product.	Quantity.	Value.
		\$
Gold..... Ozs.	50	1,037
Coal..... Tons.	1,685,661	4,127,311
Natural gas.....		63,363
Clay products.....		240,384
Other products (a).....		690,410
Total		5,122,505

(a) Includes cement, lime, stone, etc.

Mineral Production in British Columbia, 1908.

Product.	Quantity.	Value.
		\$
Copper..... Lbs.	47,274,614	6,244,031
Gold..... Ozs.	286,858	5,929,880
Lead..... Lbs.	43,195,733	1,814,221
Silver..... Ozs.	2,631,389	1,391,058
Coal..... Tons.	2,333,708	7,292,838
Clay products.....		344,446
Lime..... Bus.	176,435	44,027
Other products (a).....		643,534
Total		23,704,035

(a) Includes cement, stone, sand-lime brick, etc.

Mineral Production in Yukon, 1908.

Product.		Quantity.	Value.
			\$
Copper	Lbs.	112,264	14,828
Gold	Ozs.	174,150	3,600,000
Silver	"	63,000	33,304
Coal	Tons.	3,847	21,158
Total			3,669,290

METALLIC PRODUCTS.

SMELTER PRODUCTION.

Until comparatively recent years a considerable percentage of metalliferous ores mined in Canada has been shipped outside of the country, to be smelted and refined ; and although the smelting industry has shown steady growth there is as yet but one refinery in Canada producing fine gold, silver, and lead ; besides three metallurgical works in Ontario producing silver of varying degrees of fineness. Practically all of our production of matte and blister is still exported for refining.

Hitherto in compiling statistics of mineral production the practice has been, in the case of ores exported, to calculate the metal contents on the basis of custom analysis, without making any deduction for smelter losses. In the case of ores smelted in eastern Canada—such as the nickel-copper ores at Sudbury—the practice has been to calculate the metal contents of the mattes produced and shipped. For British Columbia the statistics collected and published by the provincial Bureau of Mines have been used in these reports. These statistics, according to the returns requested from the operators, are based on the assay values of each shipment and represent the “total gross contents (of shipment) without smelter deductions.”

As the metalliferous production of British Columbia constitutes a considerable proportion of that of the whole of Canada, it will thus be seen that the statistics of metalliferous production hitherto published include important quantities of metals not finally recoverable.

In dealing with such low grade copper ores as those of the Boundary district of British Columbia (copper contents averaging about $1\frac{1}{2}$ per cent or less) and ores so low in copper as those of Rossland, the difference between statistics of production based on assays, and statistics based on copper recovered by the smelters, will be greatly accentuated. In fact, in cases such as these, the difference as respects copper may approximate as much as 25 per cent or more of the original copper contents of the ore.

In the treatment of smelting ores, particularly ores carrying copper, gold, and silver values, there are three main operations, viz., mining, smelting, and refining, and these afford several possible view points or bases¹ for the compilation of statistics of production.

¹ A discussion of the methods of compiling mining statistics will be found in the *Mineral Resources of the United States for 1906*, gold and silver, pp. 113-116 ; copper, pp. 373-377 ; lead, p. 439 ; zinc, p. 459.

From the point of view of mine production the statistics may be made to show either: (1) the total quantity of metal contained in the ore shipped as determined by assay, which would include all metal subsequently lost in smelting and refining operations; or (2) the quantity of metal which the mining operator is paid for by the purchasing smelter, or, in the case of companies operating both mines and smelters, the quantity of metal actually recovered in the smelter products.

Statistics of smelter production should show the quantities of metals contained in the various products matte, blister, etc., produced by the smelters, and would include a small quantity of metal subsequently lost in the refining process.

Statistics based on smelter production should, if all ores shipped are included, agree fairly closely with statistics of mine production based on the quantity of metal paid for, due regard being had for the time required in transporting and smelting the ore.

No matter what basis may be adopted it will not be found possible to obtain uniform results, since different companies keep their accounts in different ways and will report accordingly.

Through the courtesy of the companies operating smelters in Canada the Mines Branch is enabled to present complete statistics of smelter and refinery production in Canada during 1908.

Returns have been received from the following companies:—

The Mond Nickel Co.,	- -	Victoria Mines, Ont.
The Canadian Copper Co.,	- -	Copper Cliff, Ont.
The Coniagas Reduction Co.,	-	Thorold, Ont.
The Deloro Mining & Reduction Co.,		Deloro, Ont.
The Consolidated Mining & Smelting Co. of Canada,	- - -	Trail, B.C.
The Sullivan Group Mining Co.,	-	Marysville, B.C.
¹ The Northport Smelting & Refining Co.		Northport, Wash., U.S.A.
The Granby Consolidated Mining, Smelting & Power Co.,	- -	Grand Forks, B.C.
The British Columbia Copper Co., Ltd.		Greenwood, B.C.
The Dominion Copper Co.,	- -	Boundary Falls, B.C.
The Tyee Copper Co., Ltd.,	- -	Ladysmith, B.C.

Refined products obtained include refined lead; fine gold, fine silver and copper sulphate produced from the residues of the lead refinery; fine silver, white arsenic, nickel and cobalt oxides produced from the Cobalt District ores of Ontario. Smelter products exported for refining include in 1908 copper matte, 7,649 tons, and blister copper, 15,418 tons, carrying gold and silver values; Bessemer nickel-copper matte 21,210 tons, carrying small gold and silver values as well as metals of the platinum group; speiss resulting from the treatment of the Cobalt District ores 1,326 tons, carrying silver, cobalt, nickel and arsenic values.

¹ The Northport Smelter treats Canadian ore almost exclusively, and for statistical purposes is considered as if located in Canada.

The aggregate results of refining and smelting may be summarized as follows: The figures unfortunately cannot be taken to represent the total production from smelting ores mined in Canada, since considerable quantities of copper and silver ore are still shipped to other smelters outside of Canada for smelting. It should also be explained that these figures include the results of the treatment of a small quantity of imported ores.

Refinery and Smelter Production, 1908.

		Refined Products.	Metals contained in matte, blister, base bullion and speiss, exported for refining.
Gold	Ozs.	15,436	203,300
Silver	"	(a) 11,168,689	3,271,899
Lead	Lbs.	36,549,274	1,116,792
Copper	"		51,965,289
Copper sulphate.....	"	203,379	
Nickel.....	"	(b)	19,506,251
Cobalt.....	"	(b)	692,170
White arsenic.....	"	1,431,052	
Arsenic.....	"		436,787

(a) There is here included 9,212,650 fine ounces of silver contained in silver bullion, of which the fineness varies from 850 to 998.

(b) Small quantities of nickel oxide and cobalt oxide were also produced.

The quantities of ores and concentrates treated during 1908 aggregated 2,218,395 tons, comprising the following:—

	Tons.
Nickel-copper ores.....	360,180
Silver-cobalt-nickel-arsenic ores.....	7,182
Lead and other ores treated in lead furnaces.....	53,545
Copper-gold-silver ores.....	1,797,488
Total.....	2,218,395

Nickel-Copper Ores: The smelters of the Canadian Copper Company at Copper Cliff and the Mond Nickel Co. at Victoria Mines treat the nickel-copper ores of the district. These ores consist of pyrrhotite and chalcopyrite, the nickel being chiefly contained in the mineral pentlandite disseminated through the ore. The greater part of the ore is roasted in open heaps. In 1908¹ the total quantity of ore mined was 409,551 tons, while the quantity smelted was 360,180 tons. The quantity of Bessemer matte shipped was 21,210 tons, containing 7,503 tons of copper and 9,572 tons of nickel.

Statistics of the smelter production of these ores are available practically since the commencement of the industry, and are shown in the following table:—

¹ See also the statistics given in the chapter on nickel.

Smelter Production of the Nickel Copper Ores of the Sudbury District.

Calendar Year.	Ore Mined.	Ore Smelted.	Matte Shipped.	Value of Matte.	Nickel contents of Matte.	Copper contents of Matte.
	Tons.	Tons.	Tons.	\$	Tons.	Tons.
1886.....	3,307	30,000?			900?	1,500?
1887.....	567					
1888.....						
1889.....	44,990	40,146	3,274		432	733
1890.....					718	651
1891.....	83,300	72,558	10,336		2,018	2,064
1892.....	74,381	57,022			1,207	1,102
1893.....			9,425		1,991	1,821
1894.....	103,223	96,038	11,681	766,422	2,454	2,604
1895.....	74,135	68,618	10,188	890,834	1,944	2,288
1896.....	94,966	71,027	10,759	416,594	1,699	1,584
1897.....	93,154	96,370	13,968		1,999	2,750
1898.....	123,820	121,924			2,759	4,187
1899.....	159,957	172,761		702,341	2,872	2,834
1900.....	156,420		23,336	1,076,306	3,540	3,364
1901.....	315,692	255,958		1,661,839	4,594	4,318
1902.....	269,538	211,847	25,311	1,327,448	5,347	3,553
1903.....	136,033	207,030	13,832	2,686,469	6,253	3,576
1904.....	203,383	118,470	10,154	2,193,198	5,274	2,455
1905.....	277,766	251,421	17,405	4,019,814	9,438	4,386
1906.....	343,814	340,059	20,310	4,628,011	10,745	5,264
1907.....	351,916	359,076	22,025	3,289,382	10,595	6,996
1908.....	409,551	360,180	21,210	2,930,989	9,572	7,503

Silver-Cobalt-Nickel-Arsenic ores : The rich silver ores of the Cobalt district, the first shipments of which were made in 1904, are still for the most part shipped out of Canada even for first treatment.

The Canadian Copper Co. established works for the treatment of these ores at Copper Cliff in 1906, at which silver bullion and white arsenic are recovered. The Coniagas Reduction Company has built a plant at Thorold, Ont., for the treatment of the ores of the Coniagas mine and also custom ore, and it is equipped to recover silver bullion and white arsenic ; nickel oxide and cobalt oxide have also been recovered at this plant, and the Company expects to make this an important feature of its operations. The Deloro Mining and Reduction Company has established works at Deloro, Ont., for the recovery of gold and silver bullion and white arsenic, with the object of treating not only the Cobalt District silver ores but also the auriferous arsenical pyrites of Hastings county.

The treatment of these ores in Ontario in 1908 gave the following results :—

Ore treated.....	7,182 tons.
Products recovered : ¹	
Silver produced.....	9,212,650 ozs. ²
White arsenic.....	1,431,052 lbs.
Speiss or residues.....	1,326 tons.
Metallic contents of speiss :	
Silver.....	2,612,344 ozs.
Nickel.....	363,140 lbs.
Cobalt.....	692,170 "
Arsenic.....	436,787 "

¹ Nickel oxide and cobalt oxide were also produced in small quantities by one firm only.

² Fine ounces contained in silver bullion, fineness ranging from 850 to 998.

Lead Ores : There were in 1908 only two lead smelting plants equipped for operation, viz., at Marysville and Trail, B.C. The smelter at Marysville was in operation for only two months during the year. The Trail smelter¹, operated by the Consolidated Mining & Smelting Co. of Canada, is supplemented by a lead refinery employing the Betts Electrolytic Process and having a capacity of 75 tons per day. The main ore supply comes from the St. Eugene mine owned by the same Company, though practically all the lead ore produced in the Slocan district, is smelted as custom ore. Supplementing the lead ores is a small tonnage of gold and silver ores with some gold concentrates from stamp mills.

In the refinery the bullion from the smelter is cast into anodes and re-deposited electrolytically upon cathode starting sheets of refined lead. The refined lead is cast into pigs of 100 pounds and 180 pounds weight, the latter being a special form for the Chinese trade.

The slimes from the tank room carry gold, silver, antimony, arsenic and copper. The first two are recovered as fine metals and the copper as copper sulphate.

Antimony was recovered for a time, but owing to a falling off of the percentage of antimony in the bullion, and a fall in the price of the metal, its recovery became unprofitable and was discontinued.

The annual production of refined lead, fine gold and silver, and of copper sulphate has been as follows :—

Calendar Year.	Refined Lead.	Fine Gold.	Fine Silver.	Copper Sulphate.
	Lbs.	Ozs.	Lbs.	Lbs.
* 1904.....	7,519,440	4,336	551,450	56,000
1905.....	15,804,509	8,602	1,088,328	77,175
1906.....	20,471,314	9,992.6	1,263,809	143,135
1907.....	26,607,461	10,394.9	1,631,422	97,751
1908.....	36,549,274	15,346.1	1,956,039	203,379

Gold Silver-Copper Ores of British Columbia : There are six copper smelters in British Columbia in addition to the smelter at Northport, Wash., U.S.A., treating these complex ores.

The ores of the Rossland camp, of which gold is the chief constituent value, are smelted in the Trail copper furnace of the Consolidated Mining & Smelting Co., and at the Northport smelter. The low grade copper ores of the Boundary district are smelted locally at Grand Forks, Greenwood, and Boundary Falls, some also going to Trail. On the coast the ores of this class are smelted at Ladysmith and Crofton, but a considerable tonnage is also shipped to United States smelters

¹ For a complete description of this smelter see *Journal of Canadian Mining Institute*, Vol. XII. "Lead smelting and refining practice at Trail, B.C.," by A. J. McNab.

for treatment, while the local smelters are receiving some foreign ores. The Crofton smelter, which was not in operation during 1908, is owned by the Britannia Copper Syndicate, Ltd.

The aggregate production of these smelters in 1908, including the foreign ores treated, was as follows :—

Ore smelted.....	1,797,488	tons.
Smelter products :		
Matte.....	7,649	"
Blister.....	15,418	"
Metallic contents of matte and blister :		
Gold.....	202,959	ozs.
Silver.....	631,484	"
Copper.....	36,960,118	lbs.

Trail Smelter : Statistics of the production of the Trail smelter including both the copper and lead smelters, have been published in the annual reports of the Company, the figures since 1906 having been as follows :—

Production of Trail Smelter.

Year Ending June 30.	Ore Smelted.	Metals Contained in Matte and Bullion Produced.			
		Gold.	Silver.	Lead.	Copper.
	Tons.	Ozs.	Ozs.	Lbs.	Lbs.
1906 (6 mos. only).....	157,640	64,590	1,074,255	15,133,683	2,399,161
1907.....	222,573	69,168	1,100,271	20,383,083	3,443,310
1908.....	305,956	121,380	2,224,888	32,157,139	4,004,468
1909.....	347,417	114,920	2,443,475	43,675,077	4,637,631
Production from 1894 to June, 1909.	1,971,559	814,442	14,837,467	178,503,739	37,478,855

Granby Smelter : The smelting plants of the Boundary district are of particular interest on account of the low grade ore treated. These ores vary from 1 to 3 per cent. in copper and from \$1 to \$3 in gold and silver, and over 1,000,000 tons are now annually smelted. There are three smelters in the district, the largest being that at Grand Forks operated by the Granby Consolidated Mining, Smelting & Power Co. The first furnace of 300 tons capacity was completed in 1890, and since that date the capacity of the plant has from time to time been increased, until at present there are eight furnaces with a capacity of about 4,500 tons per day. The converter plant which was first installed in 1902 has now a capacity of 40,000,000 pounds per year.

The quantities of ores smelted and the average extraction of metal per ton during the past four years, as published in the manager's reports to the Directors of this Company, are as follows:—

Year ending June 30.	Dry Ore Smelted.	Extraction per ton.			Average cost* of Copper per lb.
		Copper.	Silver.	Gold.	
	Tons.	Lbs.	Ozs.	Ozs.	Cts.
1906.....		24 30	0 3107	0.0513	8 35
1907.....	665,915	24 43	0 3088	0.0503	10 14
1908.....	882,611	23 42	0 2865	0.0454	10 24
1909.....	984,733	21 81	0 2724	0.0434	10 00

* Cost after deducting value of gold and silver.

These reports also give the total sales of copper in the 12 months ending June, 1907, as 16,403,497 pounds. In the 12 months ending June, 1908, the sales are stated as: copper, 21,126,926 pounds; silver, 300,593 ounces, and gold 40,139 ounces; and in the 12 months ending June, 1909, the sales were: copper, 21,901,528 pounds; silver, 335,521 ounces; and gold, 45,761 ounces.

At the British Columbia Copper Co.'s furnace at Greenwood, B.C., there are three large furnaces, each having a smelting capacity of from 650 to 750 tons per day.

The manager in his report to the Directors covering the year ending November 30, 1908, states that the "Material handled through the three blast furnaces in six month's operations, exclusive of coke, was:—

	Tons.
British Columbia Copper Co.'s ores.....	312,471
Custom ore.....	4,829
Converter slag.....	3,846
Custom matte.....	281
	<hr/> 321,427

"Included in the item of converter slag is 1,390 tons of custom ore and clay used in converter linings.

"The converter production from the above smelter consisted of 5,802,638 pounds blister copper containing 5,767,355 lbs. of fine copper, 13,597 ozs. of gold, and 58,204 ozs. of silver."

The cost of producing, refining and marketing per pound of fine copper, after crediting expenditure with gold and silver values, is stated as 9.996 cents, which is practically the same as the cost recorded at Granby.

The Ladysmith smelter, owned by the Tyee Copper Co., was the only one in operation on the coast during 1908.

In the report of the Smelter Manager covering the year ending April 30, 1908, he gives the total ore smelted as 42,807 tons. During the year 3,975.5 tons of copper matte were shipped containing 3,173,431 pounds of fine copper, 74,432 ounces of fine silver, and 3,657 ounces of fine gold.

COPPER.

The total production of copper in Canada for 1908, estimated, with the exception of the Province of Ontario, on the basis of the copper content of the ores shipped to the smelters, was 63,702,873 pounds valued at \$8,413,876, or 13·208 cents per pound, the average price for fine copper for the year in New York.

Similarly estimated the production in 1907 was 56,979,205 pounds valued at \$11,398,120, or 20·004 cents per pound, the average price for fine copper for that year. Compared with 1907 the production in 1908 shows an increase of 6,723,668 pounds, or 11·8 per cent in quantity; but a decrease in total value of \$2,984,244, or 26·2 per cent, owing to the lower average price of the metal during the past year.

Details of the production by provinces are given in Table 1.

COPPER.—TABLE 1.

Production by Provinces 1907 and 1908.

Province.	1907.		1908.		Increase or Decrease.	
	Lbs.	Value.	Lbs.	Value.	(i) Lbs.	(d) Value.
		\$		\$		\$
Quebec.	1,517,990	303,659	1,282,024	169,330	(d) 235,966	(d) 134,329
Ontario.	14,104,337	2,821,432	15,005,171	1,981,883	(i) 900,834	(d) 839,549
British Columbia...	40,832,720	8,168,177	47,274,614	6,244,031	(i) 6,441,894	(d) 1,924,146
Other Districts *...	524,158	104,852	141,064	18,632	(d) 383,094	(d) 86,220
Total.	56,979,205	11,398,120	63,702,873	8,413,876	(i) 6,723,668	(d) 2,984,244

* Includes Nova Scotia and Yukon.

For the Province of Ontario, the exception above noted, the production given in the above table is almost altogether derived from the nickel-copper ores of the Sudbury district, and the figures represent the quantity of copper contained in the nickel-copper matte shipped from Copper Cliff and Victoria Mines smelters. This figure will undoubtedly show a smaller quantity of copper than is contained in the ore charged to smelters. According to analyses published by Barlow,¹ the

¹ Nickel and copper deposits, Ontario, Geological Survey, Canada.

standard slags discarded in the smelting operations at Copper Cliff contain from 0.13 per cent to as high as 0.44 per cent of copper, and the slags in weight are equivalent to 85 per cent or more of the original ore charged. Applying these data to the statistics of nickel-copper ore charged to smelters in 1908 we find that the quantity of copper contained in the ore charged would probably be anywhere from 5 per cent to 18 per cent higher than the quantity of copper given in the table as contained in the matte produced. The relative importance of Ontario's position is, therefore, slightly underestimated.

The distinction between mine production, smelter production, and refinery production has already been discussed in some detail in the article on smelter production.

It has to be admitted that the method of stating copper production, or the production of any other metal for that matter, in terms of the quantity of metal contained in the ore, without making any allowance for smelting losses, is open to some criticism, particularly when a large portion of the ores is smelted within the country. In earlier years, when our metalliferous ores were largely shipped out of the country for first treatment, it may have been somewhat difficult perhaps to obtain actual smelter results. It seems more reasonable, however, to regard as production that quantity of metal which is actually recovered or probably recoverable, and with the object of presenting statistics of production on this basis the Mines Branch has, through the courtesy of the smelter operators, obtained fairly complete statistics of the results of their operations during 1908. These have already been given in detail under "Smelter Production," and with respect to copper show the total quantity of copper contained in blister and matte produced in Canadian smelters¹ from Canadian ores to have been approximately 50,628,386 pounds. Complete data were not obtained as to the total quantities of ore shipped out of Canada for smelting (excluding the ore shipped to Northport, Wash.) but a rough estimate would place the copper recoverable from these at about 2,300,000 pounds, making the total copper production of Canada in 1908, based on smelter results, as 52,928,386 pounds.

The exports of copper in ore, matte, regulus, etc., from Canada during the calendar year 1908, is reported by the Customs Department as 51,136,371 pounds.

W. R. Ingalls, in *Mineral Industry*, through independent inquiry, reports the copper production of Canada in 1908 as 53,725,213 pounds.

Prices : The average monthly prices, in cents per pound, of electrolytic copper in New York during the past five years is shown in the following table :—

¹ The Northport Smelter in the State of Washington, operating on British Columbia ores, is for the purposes of these statistics considered as a Canadian smelter.

Monthly average prices of Electrolytic Copper in New York.

Months.	1904.	1905.	1906.	1907.	1908.
	Cts.	Cts.	Cts.	Cts.	Cts.
January.....	12·410	15·008	18·310	24·404	13·726
February.....	12·063	15·011	17·869	24·869	12·905
March.....	12·299	15·125	18·361	25·065	12·704
April.....	12·923	14·920	18·375	24·224	12·743
May.....	12·758	14·627	18·475	24·048	12·598
June.....	12·269	14·673	18·442	22·665	12·675
July.....	12·380	14·888	18·190	21·130	12·702
August.....	12·343	15·664	18·380	18·356	13·462
September.....	12·495	15·965	19·033	15·565	13·888
October.....	12·993	16·279	21·203	13·169	13·854
November.....	14·284	16·599	21·833	13·391	14·130
December.....	14·661	18·328	22·885	13·163	14·111
Yearly Average....	12·823	15·590	19·278	20·004	13·208

In London the monthly average prices of standard copper were as shown hereunder, in £ per ton of 2,240 pounds.

Monthly average Prices of Standard Copper in London.

Months.	1904.	1905.	1906.	1907.	1908.
	£	£	£	£	£
January.....	57·500	68·262	78·869	106·739	62·386
February.....	56·500	67·963	78·147	107·356	58·786
March.....	57·321	68·174	81·111	106·594	58·761
April.....	58·247	67·017	84·793	98·625	58·331
May.....	57·321	64·875	84·867	102·375	57·387
June.....	56·398	65·881	83·994	97·272	57·842
July.....	57·256	66·887	81·167	95·010	57·989
August.....	56·952	69·830	83·864	79·679	60·500
September.....	57·645	69·667	87·831	68·375	60·338
October.....	60·012	71·406	97·269	60·717	60·139
November.....	65·085	74·727	100·270	61·226	63·417
December.....	66·384	78·993	105·226	60·113	62·943
Yearly Average....	58·857	69·465	87·232	87·007	59·902

In 1908 the price of copper varied only slightly, the lowest being 12 cents in February and the highest 14½ cents in December, the average for the year being 13·208 cents per pound. During 1907, the panic year, there was wide fluctation. The price of copper had risen by successive steps during the preceding three years until a maximum of 25 cents was reached in March of 1907. During the next four months the prices fluctuated between 24 and 21 cents, but then fell rapidly to 13 cents in October.

Statistics showing the annual copper production in Canada since 1886, on the basis explained in the introduction to this subject, are given in Table 2.

10,084—3½

The table shows the yearly increase or decrease as the case may be, and also the average yearly price per pound in New York.

COPPER.—TABLE 2.

Annual Production.

Calendar Year.	Lbs.	Increase or Decrease.		Value.	Increase or Decrease.		Average Price per Pound.
		Lbs.	%		\$	%	
				\$			Cts.
1886.....	3,505,000			385,550			11·00
1887.....	3,260,424	(d) 244,576	6·99	366,798	d) 18,752	4·86	11·25
1888.....	5,562,864	2,302,440	70·60	927,107	560,309	152·70	16·66
1889.....	6,809,752	1,246,888	22·40	936,341	9,234	0·99	13·75
1890.....	6,013,671	(d) 796,081	11·69	947,153	10,812	1·15	15·75
1891.....	9,529,401	3,515,730	58·46	1,226,703	279,550	29·51	12·87
1892.....	7,087,275	2,442,126	25·63	818,580	(d) 408,123	33·27	11·55
1893.....	8,109,856	1,022,381	14·40	871,809	53,229	6·50	10·75
1894.....	7,708,789	(d) 401,067	4·94	736,960	(d) 134,849	15·46	9·56
1895.....	7,771,639	62,850	0·81	836,228	99,268	13·47	10·76
1896.....	9,393,012	1,621,373	20·86	1,021,960	185,732	22·21	10·88
1897.....	13,300,802	3,907,790	41·60	1,501,660	479,700	46·94	11·29
1898.....	17,747,136	4,446,334	33·43	2,134,980	633,320	42·17	12·03
1899.....	15,078,475	(d) 2,668,661	15·04	2,655,319	520,339	24·37	17·61
1900.....	18,937,138	3,858,663	25·59	3,065,922	410,603	15·46	16·19
1901.....	37,827,019	18,889,881	99·75	6,096,581	3,030,659	98·84	16·117
1902.....	38,804,259	977,240	2·58	4,511,383	(d) 1,585,198	26·00	11·626
1903.....	42,684,454	3,880,195	10·00	5,649,487	1,138,104	25·23	13·235
1904.....	41,383,722	(d) 1,300,732	3·05	5,306,635	(d) 342,852	6·07	12·823
1905.....	48,092,753	6,709,031	16·21	7,497,660	2,191,025	41·29	15·590
1906.....	55,609,888	7,517,135	15·63	10,720,474	3,222,814	42·98	19·278
1907.....	56,979,205	1,369,317	2·46	11,398,120	677,654	6·32	20·004
1908.....	63,702,873	6,723,668	11·80	8,413,876	2,984,244	26·18	13·208

Statistics of exports of copper, as collected by the Customs Department, are shown in Table 3, and statistics of imports in Tables 4 and 5. The total imports of copper in so far as weights are given amounted in 1908 to 15,675,923 pounds, a quantity far exceeded by the production.

COPPER.—TABLE 3.

Exports of Copper in Ore, Matte, etc.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		\$			\$
1885.....		262,600	1897.....	14,022,610	850,336
1886.....		249,259	1898.....	11,572,381	840,243
1887.....		137,966	1899.....	11,371,766	1,199,908
1888.....		257,260	1900.....	23,631,523	1,741,885
1889.....		168,457	1901.....	32,488,872	3,404,908
1890.....		398,497	1902.....	26,094,498	2,476,516
1891.....		348,104	1903.....	38,364,676	3,873,827
1892.....		277,632	1904.....	38,553,282	4,216,214
1893.....	4,792,201	269,160	1905.....	40,740,861	5,443,873
1894.....	1,625,389	91,917	1906.....	42,398,538	7,303,366
1895.....	3,742,352	236,965	1907.....	54,688,450	8,749,609
1896.....	5,462,052	281,070	1908.....	51,136,371	5,934,559

COPPER.—TABLE 4.

Imports of Pigs, Old, Scrap, etc.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	31,900	2,130	1895.....	72,062	6,770
1881.....	9,800	1,157	1896.....	86,905	9,226
1882.....	20,200	1,984	1897.....	49,000	5,449
1883.....	124,500	20,273	1898.....	1,050,000	80,000
1884.....	40,200	3,180	1899.....	1,655,000	246,740
1885.....	28,600	2,016	1900.....	1,144,000	180,990
1886.....	82,000	6,969	1901.....	951,500	152,274
1887.....	40,100	2,507	1902.....	1,767,200	225,832
1888.....	32,300	2,322	1903.....	2,038,400	252,594
1889.....	32,300	3,288	1904.....	2,115,300	270,815
1890.....	112,200	11,521	1905.....	1,944,400	266,548
1891.....	107,800	10,452	1906.....	2,627,700	441,854
1892.....	343,600	14,894	1907 (9 mos.).....	2,616,600	520,971
1893.....	168,300	16,331	1908.....	3,612,400	650,597
1894.....	101,200	7,397			
1908 { Copper, old and scrap or in blocks.....Duty free.				193,700	36,016
Copper in pigs or ingots				3,418,700	614,581
Total 1908.....				3,612,400	650,597

COPPER.—TABLE 5.
Imports of Manufactures.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880.....	123,061	1890.....	472,668	1900.....	1,090,280
1881.....	159,163	1891.....	563,522	1901.....	951,045
1882.....	220,235	1892.....	422,870	1902.....	1,281,522
1883.....	247,141	1893.....	458,715	1903.....	1,291,635
1884.....	134,534	1894.....	175,404	1904.....	1,191,610
1885.....	181,469	1895.....	251,615	1905.....	1,775,881
1886.....	219,420	1896.....	285,220	1906.....	2,660,303
1887.....	325,365	1897.....	264,587	1907 (9 mos.)...	2,545,600
1888.....	303,459	1898.....	786,529	1908.....	2,713,060
1889.....	402,216	1899.....	551,586		

	Duty.	Lbs.	Value.
			\$
1908. { Copper in bars and rods, in coils, or otherwise, in lengths not less than 6 feet, unmanufactured	Free.	8,388,300	1,749,458
Copper, in strips, sheets or plates, not planished or coated, etc.....	"	2,955,400	688,539
Copper tubing in lengths not less than 6 feet, and not polished, bent or otherwise manufactured.....	"	509,227	143,140
Copper rollers, for use in calico printing.....	"		2,831
Copper and manufactures of :—			
Nails, tacks, rivets and burrs or washers.....	30 %		2,693
Wire, plain, tinned or plated.....	15 "	210,596	39,055
Wire cloth, etc.....	25 "		3,816
All other manufactures of, N.O.P.....	30 "		33,528
Total		12,063,523	2,713,060

Nova Scotia.

The Sterling Mining Company, operating at Waughs River, shipped 240 tons of ore to the United States during the year ending Sept. 30, 1908, which yielded 28,800 pounds of copper.

Quebec.

As usual the copper production in Quebec was derived chiefly from the pyrite ores of the Eastern Townships, which are mined primarily for the manufacture of sulphuric acid. In 1908 the Capelton mines of the Nichols Chemical Co., now known as the Albert Copper Co., were not operated, the total production being obtained from the Eustis mines. The sulphuric acid plant of the Nichols Chemical Co. was continued in operation, using ores from the Eustis mines as well as iron pyrites from Ontario. Mr. Obalski in his report on mining operations in the Province of Quebec gives the total shipments of ore in 1908 as 26,598 tons.

Statistics of copper contained in the ore shipped since 1886 are shown in Table 6.

COPPER.—TABLE 6.
Quebec :—Production.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		\$			\$
1886	3,340,000	367,400	1898	2,100,235	252,658
1887	2,937,900	330,514	1899	1,632,560	237,494
1888	5,562,864	927,107	1900	2,220,000	359,418
1889	5,315,000	730,813	1901	1,527,442	246,178
1890	4,710,606	741,920	1902	1,640,000	190,666
1891	5,401,704	695,469	1903	1,152,000	152,467
1892	4,883,480	564,042	1904	1,760,000	97,455
1893	4,468,352	480,348	1905	621,243	252,752
1894	2,176,430	208,067	1906	1,981,169	381,930
1895	2,242,462	241,288	1907	1,517,990	303,659
1896	2,407,200	261,903	1908	1,282,024	169,330
1897	2,474,970	279,424			

Ontario.

There is comparatively little copper production in this Province outside that obtained from the nickel-copper ores of the Sudbury district. There are many copper deposits, however, some of which have been worked quite extensively in former years, such as the old Bruce mines on the north shore of Lake Huron. More or less work is being done each year on deposits of this class, but very little ore has been shipped in recent years. In 1907 active operations were carried on at the Hermina mine in Salter township, the Bruce mines in Plummer township, the mine of the Cobden Copper Co. in Cobden township, the Spencer mine north of Sault Ste. Marie, and the Tip Top Copper mine west of Port Arthur. The Ontario Bureau of Mines reports the ore raised as 9,575 tons, containing about 3 per cent copper, but comparatively little was shipped. In 1908 most of these mines were closed down, the Hermina alone being kept in active operation but shipping very little ore.

Nickel-copper ores have been mined as usual by the Canadian Copper Co. at the Copper Cliff, Creighton, and Crean Hill mines, and by the Mond Nickel Co. at the Victoria mines. The total ore production in 1908 was 409,551 tons, while the ore charged to the smelter, consisting in part of roasted ore, was 360,180 tons. There was shipped during the year 21,210 tons of Bessemer matte containing 7,503 tons of copper and 9,572 tons of nickel, the value of the matte being reported as \$2,930,265. In 1907, 359,076 tons of ore were smelted, and 22,025 tons of matte shipped containing 6,996 tons of copper and 10,595 tons of nickel, the matte being valued at \$3,289,382.

These details are given somewhat more completely and in tabular form in the article on nickel, and also under "Smelter Production," page 28, to which reference may be made.

Statistics of the copper production in Ontario are given in Table 7, and the fact may be again mentioned that these figures represent mainly the copper contents of matte shipped and not the copper contents of the ore shipped.

COPPER.—TABLE 7.
Ontario :—Production.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
		\$			\$
1886	165,000	18,150	1898	8,375,223	1,007,539
1887	322,524	36,284	1899	5,723,324	1,007,877
1888	Nil.	Nil.	1900	6,740,058	1,091,215
1889	1,466,752	201,678	1901	8,695,831	1,401,507
1890	1,303,065	205,233	1902	7,408,202	861,278
1891	4,127,697	531,234	1903	7,172,533	949,285
1892	2,203,795	254,538	1904	4,913,594	630,070
1893	3,641,504	391,461	1905	8,779,259	1,368,686
1894	5,207,679	497,854	1906	10,638,231	2,050,838
1895	4,576,337	492,414	1907	14,104,337	2,821,432
1896	3,167,256	344,598	1908	15,005,171	1,981,883
1897	5,500,652	621,023			

British Columbia.

The production of copper in this Province, according to statistics collected and published by the Provincial Bureau of Mines, reached a total in 1908 of 47,274,614 pounds, as compared with 40,832,720 pounds in 1907, an increase of 6,441,894 pounds or 15·8 per cent. The production in 1906 was 42,990,488 pounds, in comparison with which 1907 shows a decrease of 2,157,768 pounds or 5 per cent.

These figures represent the total quantity of metal contained in the ores sent to the smelters for which returns were received during the year, being based on "assay values per 2,000 lbs." or "total gross contents per lot without smelter deductions."

According to returns received by the Mines Branch from British Columbia smelters the total quantity of copper contained in matte, blister, and copper sulphate produced in British Columbia smelters during 1908, including the Northport smelter in Washington State, was 37,041,115 pounds. This includes a quantity of copper that should be credited to United States ores treated in these furnaces, which would, however, to a large extent be offset by British Columbia ores treated in United States smelters other than Northport.

Returns of smelter production in this Province were not collected by this Department previous to 1908, and a record of statistics of production on this basis is not available.

Statistics of the annual production since 1894, as ascertained by the Provincial Bureau of Mines, are shown in Table 8, and by districts, since 1905, in Table 9. It

will be seen that in 1908 the ores of the Boundary district produced about 85 per cent of the total, the Rossland mines about 11 per cent, and the Coast district 3 per cent.

COPPER.—TABLE 8.
British Columbia :—Production.

Calendar Year.	Copper contained in ores, shipped	Increase.		Value.
	Lbs.	Lbs.	%	
1894.....	324,680			\$ 31,039
1895.....	952,840	628,160	193	102,526
1896.....	3,818,556	2,865,716	301	415,459
1897.....	5,325,180	1,506,624	39	601,213
1898.....	7,271,678	1,946,498	36	874,783
1899.....	7,722,591	450,913	6	1,359,948
1900.....	9,977,080	2,254,489	29	1,615,289
1901.....	27,603,746	17,626,666	177	4,448,896
1902.....	29,636,057	2,032,311	7	3,445,488
1903.....	34,359,921	4,723,864	16	4,547,735
1904.....	35,710,128	1,350,207	3·7	4,579,110
1905.....	37,692,251	1,982,123	5·6	5,876,222
1906.....	42,990,488	5,298,237	14·1	8,287,706
1907.....	40,832,720	*2,157,768	*5·02	8,168,177
1908.....	47,274,614	6,441,894	15·8	6,244,031

* Decrease.

COPPER.—TABLE 9.
British Columbia :—Production by Districts.

	1905.	1906.	1907.	1908.
	Lbs.	Lbs.	Lbs.	Lbs.
Cassiar.....		293,269	674,887	490,873
East Kootenay.....	10,606	6,910		
West Kootenay—				
Nelson.....	92,663	216,034	434,222	53,243
Slocan.....		2,861		
Trail Creek.....	5,800,294	4,750,110	5,080,275	5,042,244
All other.....		1,145		
Yale—				
Boundary.....	27,670,644	32,226,782	31,521,550	40,178,521
Ashcroft, Kamloops.....	680,808	355,377	38,706	3,269
Coast Districts.....	3,437,236	5,138,000	3,083,080	1,506,464
	37,692,251	42,990,488	40,832,720	47,274,614

The low grade ores of the Boundary district in addition to being self fluxing are remarkably uniform in character, ranging from one to two per cent in copper and from \$1 to \$2 in gold and silver.

In this district the production has been derived from four principal groups of properties operated by The Granby Consolidated Mining, Smelting & Power Co., Ltd., The British Columbia Copper Co., The Dominion Copper Co., and the Consolidated Mining and Smelting Co. of Canada, Ltd.

Each of these Companies operates its own smelter, the first two converting the copper matte to blister copper.

The approximate ore shipments during 1908, and the total shipments from the opening of the mines to the end of 1908 were as follows :—

	1908.	Total to end of 1908.
	Tons.	Tons.
Granby Con. Mining, Smelting and Power Co.	1,028,748	4,642,000
B. C. Copper Co.	348,610	1,655,000
Dominion Copper Co.	22,339	595,000
Consolidated Mining & Smelting Co., (Snowshoe)	49,036	278,000
Other mines.		70,000
Totals	1,448,733	7,240,000

The Granby Co.'s mines at Phoenix are equipped for a daily output of about 5,000 tons. At the Company's smelter at Grand Forks about 1,037,089 tons of ore were treated during 1908, producing 23,535,000 pounds of copper in the form of blister.

The British Columbia Copper Co., during the 12 months ending November 30, 1908, shipped 319,527 tons of ore. The smelter at Greenwood was operated for six months of the year only, in which time 321,427 tons of ore, including 281 tons of matte from the Dominion Copper Co.'s smelter, were put through. The converter production was 5,802,638 pounds of blister copper containing 5,767,355 pounds of fine copper; 13,597 ounces of gold, and 58,204 ounces of silver.

The cost per ton of ore handled, including all charges from ore in place to sale of the contained metals, was estimated by the Company at \$2.62 or about 10 cents per pound of fine copper after crediting expenditure with gold and silver values.

The mines of the Dominion Copper Co. were operated for a few weeks only in July and August, and the smelter at Boundary Falls treated only about 20,000 tons of ore. The financial affairs of this Company had become somewhat involved and when a temporary fuel shortage forced a shut down operations were not resumed.

The output of the Consolidated Mining & Smelting Co.'s Snowshoe mine was smelted chiefly at the Company's smelter at Trail.

Next to the Boundary camp, Rossland is the most important copper producing district. Gold is the chief element of value in this camp, although copper is of considerable importance. The total shipments of ore in 1908 are reported as 302,419 tons from the Trail Creek Mining division, containing 5,042,244 pounds of copper or an average percentage of only 0.833.

The principal operating companies were :—

The Consolidated Mining & Smelting Company of Canada, Ltd.

The Le Roi Mining Co., Ltd.

The Le Roi No. 2, Limited.

The Giant California Mining Company.

The Consolidated Mining & Smelting Company operated the Centre Star, War Eagle, Idaho, and Iron Mask mines, from which the shipments were respectively : Centre Star 104,913 tons ; War Eagle 46,969 tons ; Idaho 11,806 tons, and Iron Mask 23,295 tons, or a total of 186,983 tons. The ore is all smelted in the Company's smelter at Trail.

The Le Roi Mining Company, Ltd., shipped from the Le Roi and Black Bear mines 73,127 tons of ore to their own smelter at Northport in the State of Washington.

The shipments by Le Roi No. 2, Limited, were 29,732 tons of ore and 1,100 tons of concentrates derived from 14,604 tons of ore milled. In the annual statement published by the Company the shipments for the year ending September 30, 1908, are stated to have been 29,648 tons containing 28,452·9 ounces gold, 20,408·9 ounces silver; and 910,354 pounds of copper or an average per ton of 0·9597 ounces gold ; 0·691 ounces silver and 30,705 pounds or 1·535 per cent copper. The total smelting charges are reported as \$5.55 per ton.

The Giant-California shipped 300 tons of ore, and nine other mines about 1,200 tons.

In the "Coast Districts" 27,831 tons of ore shipped are credited with a copper content of 1,506,464 pounds, or an average of 2·7 per cent. This ore was derived chiefly from the Indian Chief group on Sidney inlet operated by the Tyee Copper Co., Ltd., the Marble Bay mines operated by the Tacoma Steel Co., and the Northern Texada mines, both on Texada island, and the Britannia mines on Howe sound operated by the Britannia Mining & Smelting Co.

On Queen Charlotte islands the Ikeda mines, owned and operated by Awaya, Ikeda & Co., were practically the only mines from which shipments were made.

According to the Mining Recorder about 6,000 tons of ore were shipped during 1908 to the Tyee Smelter at Ladysmith ; of which 2,000 tons would average 14 per cent copper, \$6 in gold, and \$2.50 in silver ; and 4,000 tons would average 6 per cent copper, \$4 in gold, and \$2 in silver. According to the returns made to the Provincial Mineralogist, however, the shipments were 6,928 tons averaging 3·5 per cent copper ; \$2.06 in gold and \$1.02 in silver.

Yukon District.

According to returns kindly furnished by the management of the "Whitehorse and Yukon Route," 3,530 tons of ore were shipped from the Whitehorse mines in 1907, and 408 tons in 1908. Direct returns were not received from all the mines, but an estimate of the copper contents of the ores shipped based on reported assays would credit the 1907 shipments with 511,838 pounds of copper, and the 1908 shipments with 112,264 pounds.

"The Whitehorse copper belt is situated in the southern part of the Yukon Territory, about forty-five miles north of the British Columbia boundary, and extends along the valley of the Lewes river, the principal feeder of the Yukon, for a distance of about twelve miles. The town of Whitehorse, in addition to being the terminus of the railway from the coast, is also the head of navigation on the Yukon.

"The history of the Whitehorse copper belt dates back to the early Klondike rush. Discoveries of copper croppings are reported to have been made by miners on their way to Dawson in the summer of 1897.

"The first claim to be staked, the Copper King, was located July 6, 1898. Later in the same year the Anaconda and Big and Little Chief claims were staked. In the following year the district was pretty thoroughly prospected on the surface, and most of the important claims, including the Pueblo, Best Chance, Arctic Chief, Grafton, War Eagle, and numerous others were discovered and staked."

During the next few years exploratory and development work was undertaken and a few occasional shipments of ore were made.

"The total amount of development work so far done in the district, including that of the past season (1907), does not exceed 3,500 feet, and the total shipments to various coast smelters aggregate about 4,000 tons. This slow progress in a camp containing so many favourable showings is remarkable, and is attributed mainly to delay in providing proper transportation facilities. Most of the important mines are situated at distances of from four to seven miles from the present terminus of the White Pass railway at Whitehorse, and are connected with it by wagon roads constructed by the territorial government. The transportation charges to Whitehorse by wagon amount to from \$3 to \$4 per ton, and from Whitehorse by rail and steamer to the various coast smelters to \$6 per ton. The large iron ore bodies on which the camp principally depends, are all comparatively low grade, averaging about 4 per cent in copper, and the margin of profit on the ores under present conditions is small.

"A spur from the main line of the White Pass railway has now been located along a portion of the copper belt, connecting closely with the principal mines, and cheaper transportation in the immediate future is assured. A large tonnage, probably half a million tons, is in sight at the various mines, as a result of recent development work, and extensive shipments are contemplated when the spur is completed."

The total ore shipments from the camp to the end of 1908 have exceeded 4,700 tons. The shipments during 1907 and 1908 reported as railway shipments are shown hereunder, the shipments up to the end of 1906 being those mentioned by Mr. R. G. McConnell in his recent report.

Shipments of Copper Ore from Whitehorse, Yukon.

	Total Ship- ments to 1906.	1907.	1908.
	Tons.	Tons.	Tons.
Arctic Chief	140	570·6	32·3
Copper King	500	275·2	360·7
Claude Irvine			14·7
Grafter		1,914·4	
Pueblo	100	530·5	
Valerie	40		
War Eagle		239·4	
	780	3,530·1	407·7

GOLD.

Refined Metal.—There is but one refinery in Canada producing fine gold bars, viz., at Trail, B. C., where the output is about 10,000 ounces per annum.

The greater part of our gold production finds its way to refineries in the United States or to the United States Mint.

A branch of the British Mint has been established in Ottawa, but a refinery is not yet in operation in connexion therewith.

At the Assay Office in Vancouver, operated in connexion with this Department, gold bullion is received, assayed, and purchased, the bullion being resold to the United States Mint. The total quantity of gold bullion received at this office during nine months ending December 31, 1908, was 89,117·76 troy ounces (weight after melting), valued at \$1,478,894, after deducting assay charges, the average fineness of the resulting bullion being 0·801½ gold and 0·191 silver. The refinery at Trail established in 1904 is operated by the Consolidated Mining & Smelting Company of Canada, Ltd., and the annual production of fine gold for the years 1904-8 is shown below. This gold is recovered from the ores treated in the lead furnaces.

Production of Refined gold at Trail, B. C.

Year.	Ozs.
1904.....	4,336
1905.....	8,602
1906.....	9,992·631
1907.....	10,394·88
1908.....	15,346·117

Mine Production.—The production of gold in Canada, made up of gold derived from alluvial workings, gold obtained from the crushing of free-milling quartz ores, and the gold contained in other metalliferous ores sent to copper and lead smelters, etc., reached a total in 1908 of 476,112 fine ounces valued at \$9,842,105, as compared with 405,517 fine ounces valued at \$8,382,780 in 1907, an increase of 70,595 ounces in quantity and \$1,459,325 in value, or 17·4 per cent. This is the first time in eight years that an increase has been shown over the previous year's output.

The production in 1907 was less than the production in 1906 by 150,898 fine ounces, or \$3,119,340, a decrease of 27·1 per cent.

The production by provinces in 1907 and 1908 is shown in Table 1 as follows:—

GOLD.—TABLE 1.

Production by Provinces 1907 and 1908.

	1907.		1908.	
	Ozs. (fine ‡)	Value.	Ozs. (fine ‡)	Value.
		\$		\$
Nova Scotia.....	(b) 13,675	282,686	11,842	244,799
Ontario.....	(b) 3,212	66,399	3,212	66,389
Alberta.....	(a) 33	675	50	1,037
British Columbia.....	(c) 236,216	4,883,020	286,858	5,929,880
Yukon.....	(a) 152,381	3,150,000	174,150	3,600,000
Totals.....	405,517	8,382,780	476,112	9,842,105

‡Calculated from the value: one dollar=0·048375 ozs.

(a) Placer gold.

(b) Gold from vein mining.

	1907.	1908.
(c) As follows: Gold from placer mining...	\$828,000	\$647,000
" vein " 	4,055,020	5,282,880
	\$4,883,020	\$5,929,880

The exact value of fine gold is $\frac{80.00}{387}$ dollars per ounce equivalent to \$20.671834. (United States Standard).

In most cases, statistics of gold production are stated as crude bullion with value thereof. The fine ounces given in the tables in this report are calculated from the values by multiplying these by $\frac{387}{3800}$ or 0·048375.

Of the total production in 1908 about \$4,248,037 or 43·2 per cent is to be attributed to alluvial workings, \$977,584 or 9·9 per cent derived from stamping and milling ores, and \$4,622,520 or 46·9 per cent contained in ores sent to smelters. The increased output in 1908 is due to two main causes: (1) the larger output from the Yukon placers resulting from the extensive development work undertaken by the Yukon Gold Company in that district, and (2) to an important increase in the assay value of some of the ores mined in the Rossland camp.

Statistics of the annual gold production in Canada since 1853 are shown in Table 2.

GOLD.—TABLE 2.

Annual Production in Canada, 1858-1908.

Calendar Year.	Ozs. (fine.‡)	Value.	Calendar Year.	Ozs. (fine.‡)	Value.
		\$			\$
1858.....	34,104	705,000	1885.....	55,575	1,148,829
1859.....	78,129	1,615,072	1886.....	70,782	1,463,196
1860.....	107,806	2,228,543	1887.....	57,460	1,187,804
1861.....	128,973	2,666,118	1888.....	53,145	1,098,610
1862.....	135,391	2,798,774	1889.....	62,653	1,295,159
1863.....	202,498	4,186,011	1890.....	55,620	1,149,776
1864.....	199,605	4,126,199	1891.....	45,018	930,614
1865.....	192,898	3,987,562	1892.....	43,905	907,601
1866.....	152,555	3,153,597	1893.....	47,243	976,603
1867.....	145,775	3,013,431	1894.....	54,600	1,128,688
1868.....	134,169	2,773,527	1895.....	100,798	2,083,674
1869.....	102,720	2,123,405	1896.....	133,262	2,754,774
1870.....	83,415	1,724,348	1897.....	291,557	6,027,016
1871.....	105,187	2,174,412	1898.....	666,386	13,775,420
1872.....	90,283	1,866,321	1899.....	1,028,529	21,261,584
1873.....	74,346	1,536,871	1900.....	1,350,057	27,908,153
1874.....	97,856	2,022,862	1901.....	1,167,216	24,128,503
1875.....	130,300	2,693,533	1902.....	1,032,161	21,336,667
1876.....	97,729	2,020,233	1903.....	911,559	18,843,590
1877.....	94,304	1,949,441	1904.....	796,374	16,462,517
1878.....	74,420	1,538,394	1905.....	684,951	14,159,195
1879.....	76,547	1,582,358	1906.....	556,415	11,502,120
1880.....	63,121	1,304,824	1907.....	405,517	8,382,780
1881.....	63,524	1,313,153	1908.....	476,112	9,842,105
1882.....	60,288	1,246,268			
1883.....	53,853	1,113,246			
1884.....	51,202	1,058,439		12,977,893	268,276,923

‡ Calculated from the value: one dollar = 0.048375 ounces.

It will be observed that previous to 1897 the production only twice exceeded \$4,000,000, the maximum output during the period being in 1863 when the production reached \$4,186,011. The discovery in 1896 of the rich placer deposits of the Yukon, however, caused a rapid increase in the production during the next four years, a second maximum being reached in 1900 when the output was only a little less than \$28,000,000. The following year showed a falling off in the Yukon output, as has each succeeding year until 1908, when the tide has apparently once more turned.

The total gold production to date represents an output of 12,977,893 ounces, or \$268,276,923.

Nova Scotia.

The gold production in this Province, which is derived almost entirely from quartz ores, was 13,895 crude ounces, in 1908, valued at \$244,799, which is equivalent to 11,842 fine ounces. The gold was derived from 61,536 tons of rock crushed, and represents an average return of a little less than \$4 per ton. With the exception of the year 1904 this is the smallest output recorded since 1881.

In 1907 the production was 14,878 crude ounces valued at \$282,686, derived from 58,550 tons of ore.

Over 90 per cent of the production in 1908 was obtained from five mines, the principal operators being as follows :—

Operator.	Location of Mine.
Boston Richardson Mining Co.,	Goldboro, Guysborough county.
Beaver Hat Mining Co., -	" " "
McDonald & Copeland, -	Isaac Harbour, Guysborough county.
California Gold Mining Co.,	Cochrane Hill, " "
Wine Harbour Gold Mining Co.,	Wine Harbour, " "
Harrigan Cove Gold Mining Co.,	Harrigan cove, Halifax county.
Dominion Mining Co., - -	Tangier, Halifax county.
Jno. H. Anderson, - - -	Lake Catcha, Halifax county.
Geo. E. Franklyn, - - -	Montague, " "
Consolidated Mines Co. of Canada, Ltd., - - -	Moose River, Halifax county.
Touquoy Gold Mining Co., -	" "
Oldham Sterling Gold Co.,	Oldham, Halifax county.
Chester Basin Gold Syndicate,	Gold River, Lunenburg county.
Uniacke Mines & Power Co., -	" "
Mic-Mac Gold Mining Co.,	" "
Dominion Antimony Co., -	West Gore, Hants county.
Eagle Mining Co., - - -	Renfrew, "
The Great Bras D'Or Gold Mining Co., - - -	Middle River, Victoria county.
The Caribou Gold Mines, -	" Halifax county.
Ponhook Mining Co., Ltd.,	Malaga Barrens, Queens county.

Statistics of the total annual production since 1862 are shown in Table 3, and of the tons of ore treated and the yield of gold per ton in Table 4. The production of gold by districts during the calendar year 1907, is shown in Table 5. The production by districts for the 12 months ending Sept. 31, 1908, as collected and published by the Provincial Mines Department, is shown in Table 6 ; while the total production from 1862 to 1908 by districts, according to the same authority, is shown in Table 7.

GOLD.—TABLE 3.
Nova Scotia:—Annual Production.

Calendar Year.	Ozs. (fine).	Value.	Calendar Year.	Ozs. (fine).	Value.
		\$			\$
1862.....	6,863	141,871	1887.....	20,009	413,631
1863.....	13,180	272,448	1888.....	21,137	436,939
1864.....	18,883	390,349	1889.....	24,673	510,029
1865.....	24,011	496,357	1890.....	22,978	474,990
1866.....	23,776	491,491	1891.....	21,841	451,503
1867.....	25,763	532,563	1892.....	18,865	389,965
1868.....	19,377	400,555	1893.....	18,436	381,095
1869.....	16,855	348,427	1894.....	18,834	389,338
1870.....	18,740	387,592	1895.....	21,919	453,119
1871.....	18,139	374,972	1896.....	23,876	493,568
1872.....	12,352	255,349	1897.....	27,195	562,165
1873.....	11,180	231,122	1898.....	26,054	538,590
1874.....	8,623	178,244	1899.....	29,876	617,604
1875.....	10,576	218,629	1900.....	28,955	598,553
1876.....	11,300	233,585	1901.....	26,459	546,963
1877.....	15,925	329,205	1902.....	30,348	627,357
1878.....	11,864	245,253	1903.....	25,533	527,806
1879.....	12,980	268,328	1904.....	10,362	214,209
1880.....	12,472	257,823	1905.....	13,707	283,353
1881.....	10,147	209,755	1906.....	12,223	252,676
1882.....	13,307	275,090	1907.....	13,675	282,686
1883.....	14,571	301,207	1908.....	11,842	244,799
1884.....	15,168	313,554			
1885.....	20,945	432,971			
1886.....	22,038	455,564		857,832	17,733,042

GOLD.—TABLE 4.
Nova Scotia:—Ore Treated, and Yield of Gold Per Ton.

Calendar Year.	Tons Treated.	Yield of Gold per ton.	Calendar Year.	Tons Treated.	Yield of Gold per ton.
1862.....	6,473	\$21.91	1886.....	29,010	\$15.70
1863.....	17,000	16.02	1887.....	32,230	12.81
1864.....	21,431	18.21	1888.....	36,178	12.08
1865.....	24,421	20.32	1889.....	39,160	13.02
1866.....	32,157	15.28	1890.....	42,749	11.11
1867.....	31,384	16.96	1891.....	36,351	12.42
1868.....	32,259	12.41	1892.....	32,552	11.98
1869.....	35,144	19.91	1893.....	42,354	8.99
1870.....	30,824	12.56	1894.....	55,357	7.04
1871.....	30,787	12.17	1895.....	60,600	7.47
1872.....	17,089	14.94	1896.....	69,169	7.13
1873.....	17,708	13.05	1897.....	73,192	7.68
1874.....	13,844	12.87	1898.....	82,747	6.50
1875.....	14,810	14.76	1899.....	112,226	5.50
1876.....	15,490	15.08	1900.....	87,390	6.85
1877.....	17,369	18.95	1901.....	91,948	5.32
1878.....	17,989	13.63	1902.....	93,842	6.68
1879.....	15,936	16.83	1903.....	103,856	5.08
1880.....	13,997	18.42	1904.....	45,436	4.71
1881.....	16,556	12.66	1905.....	57,774	4.90
1882.....	21,081	13.04	1906.....	66,059	3.82
1883.....	25,954	11.60	1907.....	58,550	4.82
1884.....	25,186	12.44	1908.....	61,536	3.97
1885.....	28,890	14.98			

GOLD.—TABLE 5.

Nova Scotia :—District Details—Calendar Year, 1907.

Districts.	Mines.	Mills.	Tons of Ore.	Total Yield of Gold.			Average Yield of Gold per ton.		
			Crushed.	Ozs.	Dwts.	Grs.	Ozs.	Dwts.	Grs.
Caribou	1	1	2,348	316	7	3	..	2	16'67
Ecum Secum.....	1	1	576	400	14	..	..	13	21'91
Gold River.....	1	1	1,065	1,379	0	3	1	5	21'52
Harrigan Cove.....	1	1	.....	.....	.....	.....	.....	.....	.....
Lake Catcha.....	1	2	89	146	2	17	1	12	20'14
Leipsigate	1	1	1,121	321	..	..	..	5	17'44
McKay	1	1	20	3	..	..	..	3	.....
Millers Lake.....	1	1	166	52	7	15	..	6	7'46
Montague	2	2	92	15	14	15	..	3	10'07
Oldham	1	1	665	807	18	..	1	4	7'14
Renfrew.....	1	1	409	47	15	..	..	2	8'04
Upper Stewiacke	1	1	182	24	18	..	..	2	12'17
Stormont	3	3	45,683	9,201	7	..	..	4	0'67
Tangier.....	1	1	647	201	15	..	..	6	5'67
Uniacke	1	1	3	4	10	..	1	10	.....
Wagamatkook	1	1	77	24	14	21	..	6	10'24
Whiteburn	1	1	76	42	6	..	..	11	3'16
Wine Harbour	1	1	3,928	569	14	..	..	2	21'61
Gold recovered from stib- nite ore.....	..	..	1,403	1,319	..	..	..	18	19'26
			58,550	14,878	4	2	..	5	1'97

GOLD.—TABLE 6.

Nova Scotia : District Details—Year ended Sept. 30, 1908.

District.	Tons Crushed.	Total Yield of Gold.			Average Yield of Gold per ton.		
		Ozs.	Dwts.	Grs.	Ozs.	Dwts.	Grs.
Stormont	41,793	5,835	15	0	..	2	19
Wagamatkook	2,800	590	9	19	..	4	5
Caribou	1,240	132	0	0	..	2	3
Caribou (Moose River)	8,952	890	10	0	..	2	0
Tangier	567	256	0	0	..	9	1
Oldham	754	2,458	3	0	3	5	5
Leipsigate	2,692	868	5	19	..	6	11
Gold River	712	474	16	11	..	13	8
Brookfield	15	2	5	0	..	3	0
McKay Settlement	11	1	8	4	..	2	13
Uniacke	22	21	19	4	..	19	23
Lake Catcha	106	219	1	14	2	1	8
Montagu Mortared .....	..	1	15	0	..	..	..
Uniacke .....	..	53	8	15	..	..	..
Lake Catcha .....	..	5	17	10	..	..	..
* Total	59,664	11,811	15	0	..	3	23

*This total does not include the stibnite ore mined at West Gore, Hants co. Returns for fiscal year show that 132 tons and 1,209 lbs. of ore contained 179 ozs., 5 dwts. of gold.

10,084—4½

GOLD.—TABLE 7.

Nova Scotia :—Production of Gold from 1862 to 1908.

District.	Tons Crushed.	Total Yield of Gold.			Average Yield of Gold.			Value at \$19 per oz.
		Ozs.	Dwts.	Grs.	Ozs.	Dwt.	Grs.	
*Caribou and Moose River..	203,008	55,915	16	22	.....	5	12	1,062,401
Montague.....	29,178	41,985	19	14	.....	8	19	797,734
Oldham.....	55,037	60,982	18	21	.....	1	2	1,158,676
Renfrew.....	52,904	45,129	7	19	.....	17	1	857,459
Sherbrooke.....	299,931	152,973	15	2	.....	10	5	2,906,501
Stormont.....	435,646	106,867	5	17	.....	4	22	2,030,479
Tangier.....	51,765	24,384	11	19	.....	9	10	463,307
†Uniacke.....	63,179	43,904	3	18	.....	13	21	834,180
Waverley.....	155,520	69,980	10	16	.....	9	0	1,329,630
|| Brookfield.....	92,282	38,661	18	22	.....	8	7	734,676
‡Salmon River.....	118,440	41,699	10	20	.....	7	1	792,291
|| Whiteburn.....	6,907	9,800	0	2	.....	1	8	186,200
§Lake Catcha.....	27,202	26,986	5	23	.....	19	20	512,739
*Rawdon.....	12,189	9,606	5	10	.....	15	18	182,519
Wine Harbour.....	77,396	34,992	15	11	.....	9	1	664,863
|| Fifteennile Stream.....	36,456	17,058	15	5	.....	9	8	324,117
Malaga.....	20,896	19,293	11	7	.....	18	11	366,578
Other districts.....	138,529	73,025	16	2	.....	10	13	1,387,490
	1,877,465	873,249	9	10	.....	9	7	16,591,740
Not included in above ; gold extracted from or contained in stib- nite or shipped from West Gore, as per returns.....	1905 527 1906 783 1907 1,403 1908 133	1,232 1,031 1,319 179	16 13 18 5	23 11 12 0	..... ..... ..... .....	2 1 18 6	6 8 19 23	23,424 19,602 25,078 3,406
Total.....	1,880,311	877,013	3	8	.....	.....	.....	16,663,250

*From 1869. †From 1866. ‡From 1883. || From 1887. § From 1882. ¶ From 1837
|| From 1888.

The following notes with respect to operations at the principal mines are taken from the Report of the Provincial Department of Mines :—

Boston Richardson Mining Company, operating at Goldboro, Guysborough county.

During the year ending Sept. 30, 1908, 38,000 tons of ore were crushed, yielding 4,092 ounces of gold by stamp, amalgamation, and cyanide processes, making a total average recovery of 89 per cent ; 76 per cent by amalgamation, and 13 per cent by cyanide. This is a decrease of 4,850 tons crushed, and 2,412 ounces of gold as compared with last year.

Consolidated Mines Company of Canada, Ltd., at Moose River, Halifax county.

This Company employed an average of 55 men, and from 8,326 tons of quartz and slate crushed recovered 844 ounces of gold, being an increase of 629 ounces of gold recovered, and 5,431 tons crushed compared with the previous year.

Oldham Sterling Gold Company, at Oldham, Halifax county.

An average of 40 men were employed by this firm throughout the year. From 526 tons of quartz crushed 2,384 ounces of gold were recovered, representing

an average recovery of 4.53 ounces to the ton. The production for 1907 was 853 ounces from 362 tons of quartz, being a yield of 2.36 ounces to the ton. The production for 1908 was thus 1,531 ounces greater than in 1907, and the yield to the ton almost twice as great as in 1907.

Mic-Mac Gold Mining Co., Mic-Mac Mines, Lunenburg county.

At this mine there was crushed between December, 1907, and May, 1908, about 2,692 tons of quartz, yielding 868 ounces of gold and 194 ounces of silver.

The Great Bras d'Or Gold Mining Co., Middle River, Victoria county.

The operations of this Company are of special interest, and the past year shows the first gold recovered in this district, or in fact in the island of Cape Breton, by stamp-milling.

An average of 31 men were employed, and from 2,800 tons of quartz crushed, 590 ounces of gold were recovered, being an average return of 4.21 dwts. per ton.

Quebec.

There has been no production of gold reported in this Province during the past two years. The production during the four years from 1903 to 1906 practically represents the gold contained in the pyritous ores mined at Capelton and Eustis in the Eastern townships. These ores are still being mined, but no returns have been received as to the gold contents. Very little gold has been obtained from the alluvial deposits of the St. Francis, Chaudiere, and Gilbert rivers since 1894, when the output was returned as \$29,196. A considerable amount of prospecting, however, is being done each year with the hope of re-establishing a gold mining industry in this district. There has also been some prospecting of gold-bearing quartz in Marston township, as well as in the northern portion of Pontiac county adjacent to the Larder Lake district of Ontario.

GOLD.—TABLE 8.
Quebec :—Annual Production.

Calendar Year.	Ozs. (fine*)	Value.	Calendar Year.	Ozs. (fine*)	Value.
		\$			\$
1877.....	583	12,057	1893.....	759	15,696
1878.....	868	17,937	1894.....	1,412	29,106
1879.....	1,160	23,972	1895.....	62	1,281
1880.....	1,605	33,174	1896.....	145	3,000
1881.....	2,741	56,661	1897.....	44	900
1882.....	827	17,093	1898.....	295	6,089
1883.....	860	17,787	1899.....	238	4,916
1884.....	422	8,720	1900.....	Nil	Nil
1885.....	103	2,120	1901.....	145	3,000
1886.....	193	3,981	1902.....	391	8,073
1887.....	78	1,604	1903.....	180	3,712
1888.....	181	3,740	1904.....	140	2,900
1889.....	58	1,207	1905.....	191	3,940
1890.....	65	1,350	1906.....	165	3,412
1891.....	87	1,800	1907.....	Nil	Nil
1892.....	628	12,987	1908.....	Nil	Nil
				14,626	302,305

*Calculated from the value: one dollar=0.048375 ozs.

Ontario.

Four companies in 1908 showed a total production of 3,787 crude ounces valued at \$66,389. This is practically the same production as was recorded for 1907. The producing mines were:—

The Deloro Mining & Reduction Company, Deloro, Ont.

The Lepage Gold Mining Co., Ltd., operating the Grace mine at Michipicoten river.

The St. Anthony Gold Mine at Ignace, Ont., leased to and operated by J. S. Steele.

The Imperial Gold Mines, Ltd., operating the Laurentian mine near Gold Rock, Ont.

A considerable amount of development and exploratory work was done on a number of other properties.

The production is practically all from quartz milling ores, of which 10,607 tons were treated in 1908, averaging about \$6.26 per ton.

The Larder Lake district in the north, which has attracted a good deal of attention, has not as yet become a regular producer of bullion.

Statistics of the production of gold in Ontario since 1887 are shown in Table 9 below.

GOLD.—TABLE 9.

Ontario :—Annual Production.

Calendar Year.	Ozs. (fine*).	Value.	Calendar Year.	Ozs. (fine*).	Value.
		\$			\$
1887.....	327	6,760	1899.....	20,394	421,591
1888.....	Nil.	Nil.	1900.....	14,391	297,495
1889.....	"	"	1901.....	11,844	244,837
1890.....	"	"	1902.....	11,118	229,828
1891.....	97	2,000	1903.....	9,076	188,036
1892.....	344	7,118	1904.....	1,935	40,000
1893.....	708	14,637	1905.....	4,402	91,000
1894.....	1,917	39,624	1906.....	3,202	66,193
1895.....	3,015	62,320	1907.....	3,212	66,399
1896.....	5,563	115,000	1908.....	3,212	66,389
1897.....	9,157	189,294			
1898.....	12,863	265,889			
				116,797	2,414,410

* Calculated from the value : one dollar = 0.048375 ozs.

Alberta.

The value of the gold derived from the placer deposits of the Saskatchewan river and purchased by banks at Edmonton was, in 1907, about \$675, and in 1908 about \$1,037. This is the only record of production from that district during these years.

Statistics of the production of gold from the Saskatchewan river since 1887 are shown in Table 10.

GOLD.—TABLE 10.

Alberta :—Annual Production.

Calendar Year.	Ozs. (fine*).	Value.	Calendar Year.	Ozs. (fine*).	Value.
		\$			\$
1887.....	102	2,100	1899.....	726	15,000
1888.....	58	1,200	1900.....	242	5,000
1889.....	967	20,000	1901.....	726	15,000
1890.....	193	4,000	1902.....	484	10,000
1891.....	266	5,500	1903.....	48	1,000
1892.....	508	10,506	1904.....	24	500
1893.....	466	9,640	1905.....	121	2,500
1894.....	726	15,000	1906.....	39	800
1895.....	2,419	50,000	1907.....	33	675
1896.....	2,661	55,000	1908.....	50	1,037
1897.....	2,419	50,000			
1898.....	1,209	25,000		14,487	299,458

* Calculated from the value : one dollar = 0·048375 ozs.

British Columbia.¹

The gold production in British Columbia in 1908—including the alluvial gold recovered, the gold recovered in stamp mills, and the gold contained in ores sent to the smelters—reached a total value of \$5,929,880, being the largest production yet recorded. Compared with 1907, when the production was \$4,883,020, an increase of \$1,046,860, or 21·4 per cent is shown. The production in 1907, however, had been the lowest in seven years, and was less than the production in 1906 by \$696,019 or 12·5 per cent. During the past ten years the average yearly production has been \$5,408,698.

In 1907, gold to the value of \$828,000 or 16·9 per cent was derived from placer workings, and \$4,055,020 or 83·1 per cent was from lode ores. Of the latter about 95 per cent was contained in ores sent to smelters, the balance being recovered by stamp milling.

In 1908 the production of placer gold was only \$647,000, a decrease as compared with 1907 of \$181,000 or 21·9 per cent, while the production of lode gold was \$5,282,880, an increase of \$1,227,860 or over 30 per cent as compared with 1907. This remarkable increase was due principally to the Rossland camp, which produced in 1908 some \$986,806 or 50 per cent more gold than in 1907, derived partly from an increased tonnage, but chiefly through an increased average assay value of the ores of the camp.

Statistics of production by districts in 1907 and 1908 are shown in Tables 11 and 12, while the total annual production since 1858 is shown in Table 13.

¹ The statistics of gold production for this Province are as published by the provincial mineralogist at Victoria.

GOLD.—TABLE 11.

British Columbia :—Production by Districts, ‡ 1907.

Districts.	Gold : Placer.		Gold : Lode.	
	Ozs.	Value.	Ozs.	Value.
Cariboo :—		\$		\$
Cariboo	15,325	306,500		
Quesnel	2,200	44,000		
Omineca	500	10,000		
Cassiar :—				
Atlin :—				
All other.....	20,400	408,000		
East Kootenay :—				
Fort Steele.....	1,250	25,000	165	3,410
Others.....	500	10,000	6	124
West Kootenay :—				
Ainsworth.....			118	2,439
Nelson	50	1,000	13,383	276,627
Slocan			14	289
Trail Creek.....			94,573	1,954,824
Others.....	250	5,000	1,168	24,143
Lillooet.....	600	12,000	180	3,721
Yale :—				
Grand Forks	75	1,500	81,218	1,678,776
Similkameen	50	1,000		
Yale.....	150	3,000	20	413
Coast, and all others.....	50	1,000	5,334	110,254
	41,400	828,000	196,179	4,055,020

‡ From Annual Report of the Minister of Mines for British Columbia.

GOLD.—TABLE 12.

British Columbia :—Products by Districts, ‡ 1908.

Districts.	Gold : Placer.		Gold : Lode.	
	Ozs.	Value.	Ozs.	Value.
		\$		\$
Cariboo :—				
Cariboo	17,750	355,000		
Quesnel	1,500	30,000		
Omineca	1,000	20,000		
Cassiar :—				
Atlin	10,150	203,000		
All other divisions	450	9,000	693	14,324
East Kootenay :—				
Fort Steele	170	3,400		
Other divisions	20	400		
West Kootenay :—				
Ainsworth			162	3,349
Nelson	50	1,000	17,376	359,162
Slocan and Slocan City			96	1,984
Trail Creek			142,314	2,941,630
All other divisions	250	5,000	870	17,982
Lillooet	660	13,200	28	579
Yale :—				
Grand Forks	100	2,000	91,551	1,892,359
Similkameen, etc.	50	1,000		
Yale, etc.	150	3,000		
Coast and other divisions	50	1,000	2,492	51,510
Totals	32,350	647,000	255,582	5,282,880

‡ From the Annual Report of the Minister of Mines, British Columbia.

GOLD.—TABLE 13.

British Columbia :—Annual Production.

Calendar Year.	Ozs. (fine†).	Value.	Calendar Year.	Ozs. (fine†).	Value.
		\$			\$
1858	34,104	705,000	1885	34,527	713,738
1859	78,129	1,615,072	1886	43,714	903,651
1860	107,806	2,228,543	1887	33,558	693,709
1861	128,973	2,666,118	1888	29,834	616,731
1862	128,528	2,656,903	1889	28,489	588,923
1863	189,318	3,913,563	1890	23,918	494,436
1864	180,722	3,735,850	1891	20,792	429,811
1865	168,887	3,491,205	1892	19,327	399,525
1866	128,779	2,662,106	1893	18,360	379,535
1867	120,012	2,480,863	1894	25,664	530,530
1868	114,792	2,372,972	1895	61,289	1,266,954
1869	85,865	1,774,978	1896	86,504	1,788,206
1870	64,675	1,336,956	1897	131,805	2,724,657
1871	87,048	1,799,440	1898	142,215	2,939,852
1872	77,931	1,610,972	1899	203,295	4,202,473
1873	63,166	1,305,749	1900	228,916	4,732,105
1874	89,233	1,844,618	1901	257,292	5,318,703
1875	119,724	2,474,904	1902	288,383	5,961,409
1876	86,429	1,786,648	1903	284,108	5,873,036
1877	77,796	1,608,182	1904	275,975	5,704,908
1878	61,688	1,275,204	1905	285,529	5,902,402
1879	62,407	1,290,058	1906	269,886	5,579,039
1880	49,044	1,013,827	1907	236,216	4,883,020
1881	50,636	1,046,737	1908	286,858	5,929,880
1882	46,154	954,085			
1883	38,422	794,252			
1884	35,612	736,165		5,792,334	119,733,208

† Calculated from the value : one dollar=0.048375 ozs.

That placer gold mining is subject to the greatest fluctuations, even after it passes out of the range of individual methods into the hands of large companies is evidenced by the results in Atlin district, where the production was \$408,000 in 1907, but only \$203,000 in 1908. In this camp, as in many others, the ground has passed into the possession of a few large companies, and the temporary stopping of one of these companies causes a large percentage of decrease in the output. In this case it was the Atlin Consolidated Mining Company, owning the "Guggenheim Steam Shovel," that failed to operate; while another large company, the Pine Creek Power Company, was enlarging its ditch and was, therefore, prevented from getting through it the necessary water for gravel washing.

In the Dease Lake section of Stikine division, the Berry Creek Co., the largest company there, failed to operate this year, so reducing the output of the camp by two-thirds.

The Cariboo district, including Barkerville and Quesnel sections, held its own and produced over half the placer output of the Province.

Dredging for gold has not been successful ; the inland dredges at Atlin have been abandoned, and although a little dredging was done at Lillooet and Yale on the lower Fraser river, the amount of gold recovered was small.

Of the lode gold production 55·7 per cent was derived from the Rossland camp in 1908, as compared with 48·2 per cent in 1907.

The principal companies carrying on active mining operations during 1908 were as follows :—

The Consolidated Mining and Smelting Company of Canada, Ltd., with total shipments of 186,983 tons.

The Le Roi Mining Company, Ltd., shipping 73,127 tons.

The Le Roi No. 2, Ltd., shipping 29,732 tons, in addition to which 14,604 tons were milled at the mine, producing 1,000 tons of concentrates.

The Giant California Mining Co., Ltd., shipping about 300 tons of ore. Smaller shipments were made from a number of other properties working under lease.

The following table shows the production of the Rossland mines since 1894, and illustrates the average results attained during each of the past fifteen years.

Ore Shipments, total metallic contents, and average metallic contents per ton from Rossland mines, as determined from smelter returns.

Year.	Ore, tons, 2,000 lbs.	Gold.		Silver.		Copper.		Total.	Value Per ton.
		Ozs.	Ozs. Per ton.	Ozs.	Ozs. Per ton.	Lbs.	Per cent	\$	\$ c.
1894.....	1,856	3,723	2·000	5,357	2·890	106,229	2·850	75,510	40.69
1895.....	19,693	31,497	1·600	46,702	2·410	840,420	2·100	702,459	35.67
1896.....	38,075	55,275	1·450	89,285	2·340	1,580,635	2·080	1,243,360	32.65
1897.....	68,804	97,024	1·420	110,068	1·600	1,819,586	1·320	2,097,280	30.48
1898.....	111,282	87,343	0·780	170,804	1·540	5,232,011	2·350	2,470,811	22.10
1899.....	172,665	102,976	0·596	185,818	1·070	5,693,889	1·650	3,229,086	18.70
1900.....	217,636	111,625	0·513	167,378	0·769	2,071,865	0·476	2,739,300	12.58
1901.....	283,360	132,333	0·467	970,460	3·424	8,333,446	1·470	4,621,299	16.31
1902.....	329,534	162,146	0·492	373,101	1·132	11,667,807	1·770	4,893,395	14.85
1903.....	360,786	145,353	0·403	209,537	0·581	8,652,127	1·199	4,255,958	11.80
1904.....	312,991	133,095	0·425	181,830	0·581	7,119,876	1·137	3,760,866	12.01
1905.....	330,618	129,843	0·393	147,753	0·447	5,800,294	0·877	3,672,828	11.11
1906.....	279,527	105,356	0·377	126,174	0·451	4,750,110	0·850	3,173,587	11.35
1907.....	285,923	94,573	0·331	126,661	0·443	5,080,275	0·888	3,049,485	10.67
1908.....	302,419	142,314	0·471	129,558	0·428	5,042,244	0·834	3,672,270	12.14

The Boundary is the next district of importance as a gold producer, being credited with \$1,892,359 in 1908, an increase of nearly 13 per cent over the production in 1907. This output is in large part due to a small gold content of the large tonnage of low grade copper ore mined in this district. These ores will average in gold only from 0·04 to 0·05 ounces to the ton, but nearly one and a half million tons were mined in 1908. Included in this district also is the output of

the Hedley camp in the Osoyoos Mining division. The principal producer in this camp was the Nickel Plate group operated by the Daly Reduction Company. The ore is chiefly an auriferous arsenopyrite, which is crushed in a 40 stamp mill and the gold recovered by amalgamation and cyanidation. The efficiency of the stamp mill and cyanide plant has been greatly increased, the recovery of values for 1908 having been reported as follows: extraction on plates 21 per cent, on vanners 41.5 per cent, and in cyanide 29 per cent, making a total extraction of 91.5 per cent. The daily average tonnage of ore treated has been brought up to about 130 to 135 tons, and during the past year about 42,000 tons of ore were treated, producing 20,000 ounces of gold.

From the Nelson Mining division gold to the value of \$359,162 was obtained in 1908, chiefly from properties in Sheep Creek camp. The ores of this camp are treated in stamp mills and values saved on tables as concentrates after the free gold is extracted on amalgamated plates.

Tungsten has been found associated with some of these ores.

The principal shipping mines of the camp were the Nugget, operated by the Nugget Gold Mines, Ltd., the Mother Lode and Kootenay Belle, operated by J. L. Warner, and the Queen mine, sold during the year to a Minneapolis syndicate and operated under the management of Chas. Lewiston. These four properties shipped or milled about 11,600 tons of ore valued at upwards of \$195,000.

Mr. Brock, Director of the Geological Survey, visited this camp during 1908 and his descriptions of the mines will be found on pages 18 to 20 of the Summary Report of the Geological Survey for 1908. Writing of the future prospects of the camp he states that:—

"The gold veins of Sheep creek are of considerable promise. They are clean-cut fissure veins of fair size; they appear to be persistent in a horizontal sense and are likely to be so in a vertical sense also; they appear to carry good values and to have high grade pay-streaks; and the ore mills freely. They are oxidized to a depth unusual in British Columbia. While no doubt they will be found to change from oxidized to sulphide ore if followed to any deeper levels, the experience with the unoxidized ore of the Queen mine below the zone of weathering justifies the hope that they will remain to a large extent free milling, that the sulphides will be profitably concentrated, and that the ore, while perhaps becoming poorer, may still remain of pay grade.

The conditions for mining are favourable. The properties can usually be developed by tunnels along the leads. Wood and water are generally conveniently available. A first-class wagon road, with easy grades, extends from the railway at Salmo to the Yellowstone and Kootenay Belle mills, a distance of about 10 miles. Short aerial trams would ordinarily place the ore at a point where it may be milled by water-power. If too great a demand should be made upon the local power, electrical energy might be brought in from the outside.

While the outlook is distinctly encouraging for profitable, small mines, it is to be understood that none of the veins as yet show signs of becoming large and heavy producers. Heavy capitalization would be as unwise as it is unnecessary.

So far it has the appearance of being a good poor man's camp. There are a large number of quartz veins about the head of Sheep and Lost creeks which afford a good field for the prospector."

At the Granite Poorman, six miles west of Nelson, about 8,000 tons of ore were treated in the 20 stamp-mill, yielding about \$60,000 gross value.

From the Arlington mine on the north fork of Salmon river, operated by the Hastings (B.C.) Exploration Co., about 1,190 tons were shipped, yielding about \$65,000 in gold and silver. This ore was shipped to the Trail smelter.

The coast districts reported a production of only \$51,510 in gold, a decrease of \$58,744 as compared with 1907. The chief mines shipping during 1908 were the Marble Bay mine on Texada island, operated by the Tacoma Steel Co., and shipping about 1,000 tons, and the Indian Chief mines at Sidney inlet on the west coast of Vancouver island, worked by the Tye Copper Co. and shipping about 3,300 tons.

Yukon.

For the first time in eight years the gold production of the Yukon shows an increase over the previous year's output.

In round numbers the production in 1908 was \$3,600,000, as compared with \$3,150,000 in 1907, an increase of \$450,000 or 7 per cent. The production in 1907 was less than in 1906 by \$2,450,000 or a decrease of nearly 44 per cent.

The statistics of the production of gold in the Yukon district during the years between 1898 and 1906, as given in Table 14, are based primarily on the receipts of gold at the United States mints and receiving offices and credited to the Canadian Yukon. Although a royalty was exacted on the gold output, it seems certain that, particularly during the years of high production, considerable amounts of gold were produced which escaped the royalty payment.

During the past three years, however, the gold production of the Yukon as ascertained by the Interior Department, and on which a royalty of $2\frac{1}{2}$ per cent is imposed, has agreed fairly closely with the quantities reported at the United States receiving offices as having been derived from the Canadian Yukon. For the purposes of collecting the royalty a fixed value of \$15 per ounce is placed upon the crude gold. The actual value of the gold will average somewhat higher than this, however. The average value of the deposits for a number of years, as shown by the experience of United States assay offices, has been about \$16.50 per ounce.

At the Canadian Assay Office in Vancouver, B.C., there was deposited during the 9 months ending Dec. 31, 1908, 60,132 ounces from the Yukon, valued, after all charges had been deducted, at \$1,000,296, showing an average value of \$16.63 per ounce.

The production of crude gold in the Yukon during the past three years, as ascertained by the Department of the Interior, and upon which royalty of $2\frac{1}{2}$ per cent has been collected, is shown in the accompanying table.

Production of Crude Gold in the Yukon District.

Month.	1906.	1907.	1908.
	Ozs.	Ozs.	Ozs.
January.....	3,732·94	7,308·95	2,464·00
February.....	11,693·99	213·00	47·30
March.....	10·30	66·80	16·65
April.....	784·77	202·80	947·00
May.....	64,060·66	35,736·62	6,851·96
June.....	57,578·27	31,402·14	51,530·90
July.....	49,012·36	26,793·50	35,291·11
August.....	54,947·07	22,392·10	37,930·99
September.....	53,487·08	33,119·51	39,654·27
October.....	51,799·53	35,589·70	37,028·98
November.....	131·81	200·30	1,989·39
December.....	3,352·83	52·80	5,491·76
	350,391·61	193,078·22	219,244·31

In 1908 the production is estimated at \$3,600,000 in gold representing 174,150 fine ounces of metal, and 41,000 fine ounces of silver valued at \$21,674, being at the average price of fine silver for the year; making a total valuation of the Yukon output of \$3,621,674.

In 1907 the production is estimated at \$3,150,000 in gold representing 152,381 fine ounces of metal, and 35,988 fine ounces of silver valued at \$23,510, the silver being the quantity reported as received at United States receiving offices. The total value in gold and silver for the year was thus \$3,173,510.

Statistics of the total annual gold production in the district since 1885 are shown in Table 14.

GOLD.—TABLE 14.

Annual Production in Yukon.

Calendar Year.	Ozs. (fine‡).	Value.	Calendar Year.	Ozs. (fine‡).	Value.
		\$			\$
1885)			1898.....	483,750	10,000,000
1886)	4,387	100,000	1899.....	774,000	16,000,000
1887.....	3,386	70,000	1900.....	1,077,553	22,275,000
1888.....	1,935	40,000	1901.....	870,750	18,000,000
1889.....	8,466	175,000	1902.....	701,437	14,500,000
1890.....	8,466	175,000	1903.....	592,594	12,250,000
1891.....	1,935	40,000	1904.....	407,938	10,500,000
1892.....	4,233	87,500	1905.....	381,001	7,876,000
1893.....	8,514	176,000	1906.....	270,900	5,600,000
1894.....	6,047	125,000	1907.....	152,381	3,150,000
1895.....	12,094	250,000	1908.....	174,150	3,600,000
1896.....	14,513	300,000			
1897.....	120,937	2,500,000			
				6,181,817	127,789,500

‡ Calculated from the value: one dollar=0·048375 ozs.

Since 1898 a royalty to the extent of \$3,615,381 has been collected on the gold production of this district. The yearly amounts collected, as well as the annual production of gold as ascertained by the Interior Department, are shown in the accompanying table. The difference between these figures and those shown in Table 14, which are based on the Mint receipts of Yukon gold, has already been mentioned and is probably due to two main factors: (1) the fixing of the value of the gold for royalty purposes at \$15 per ounce, a figure from \$1 to \$2 less than the actual value of the gold, and (2) the probability that in the earlier years of royalty collection considerable quantities of gold dust left the camp unrecorded and escaped royalty payment.

Gold Production in the Yukon, and Royalty Collected.†

Fiscal Year.	Total Gold Production.	Total Exemption.	Royalty Collected on.	Royalty Paid.
	\$	\$	\$	\$
1898.....	3,072,773	339,845	2,732,928	273,292
1899.....	7,582,283	1,699,657	5,882,626	588,262
1900.....	9,809,464	2,501,744	7,307,720	730,771
1901.....	9,162,082	1,927,666	7,236,522	592,660
1902.....	9,566,340	1,199,114	8,367,225	331,436
1903.....	12,113,015	.....	12,113,015	302,893
1904.....	10,790,663	.....	10,790,663	272,217
1905.....	8,222,054	.....	8,222,054	206,760
1906.....	6,540,007	.....	6,540,007	163,963
1907 (9 months).....	3,304,791	.....	3,304,791	82,622
1908.....	2,820,162	.....	2,820,162	70,505

†From the Report of the Mines Branch of the Department of the Interior, 1908.

IRON AND STEEL.

INTRODUCTION.

The accompanying statistical review of the iron industry in Canada is divided into two sections; the first dealing with the production of iron ores, and the second with the production of pig iron and steel.

Although iron ores are of wide occurrence throughout Canada, being found in practically every province, and in many cases in undoubted quality and quantity, nevertheless, the development of our iron ore deposits has not kept pace with the growth of our iron metallurgical industries.

The total production of iron ore in Canada up to date, has probably not exceeded 5,000,000 tons, while our present rate of production varies from 300,000 to 400,000 tons per annum.

Newfoundland, where we obtain from 650,000 to 700,000 tons per annum for use at Sydney—is producing close to 1,000,000 tons per year. Since 1896, or during the past thirteen years, we have imported nearly 3,000,000 tons of ore, chiefly from Newfoundland and the south shore of Lake Superior, for use in our Canadian smelters. The reasons for this large importation of ores, when we have apparently such important and extensive deposits of our own, are, probably, chiefly economic.

In Nova Scotia the Newfoundland ores can be laid down at Sydney more cheaply and more certainly than the local ores, while in Ontario, although numerous iron ranges are known across the northern portion of the Province north of Lakes Superior and Huron, questions of transportation have undoubtedly delayed their development in some cases, while in others the ores are of too low grade to compete with the other sources of supply.

At the present time there are in Canada about seven or eight producing mines, and of these, only one, the Helen mine, is producing over 100,000 tons per annum.

During the past few years the Mines Branch has been carrying on special investigations into the iron ore resources of Canada, and the following reports have already been published:—

The Iron Ore Deposits of Nova Scotia, by Dr. J. E. Woodman.

The Iron Ore Deposits of Thunder Bay and Rainy River District, Ontario, by F. Hille, M.E.

The Tungsten Ores of Canada, by Dr. T. L. Walker.

Chrome Iron Ore Deposits of the Eastern Townships, Quebec, by Fritz Cirkel, M.E.

Iron Ore Deposits along the Ottawa (Quebec side) and Gatineau Rivers, Quebec, by Fritz Cirkel, M.E.

Iron Ore Deposits of Vancouver and Texada Islands, by Einar Lindeman, M.E.

The production of pig iron and steel in Canada has become an important industry, though dependent to a very large extent on imported supplies of ore and fuel. The growth of the industry has no doubt been greatly stimulated by the payment of bounties on the part of the Dominion government. Production is as yet confined to the eastern half of Canada, chiefly in the Provinces of Ontario and Nova Scotia. There are sixteen completed blast furnaces, with a total daily capacity of about 2,665 tons.

The general business depression of 1908 resulted in only a slightly decreased production of pig iron in that year, while a rapid recovery is indicated by the greatly increased rate of production being maintained during the early months of 1909. The rapid growth of population, the extensive railway construction being undertaken, the replacement of wooden bridges by steel on old railways, and the increasing use of steel in building construction, all mean a great increase in our consumption of iron and steel goods, so that in 1908, although our own furnaces turned out 630,835 tons of pig iron, we imported in addition over a million tons of iron and steel.

A summary of the chief statistics of the production of iron ore, pig iron, and steel is given hereunder, while many details will be found in subsequent pages.

Statistical Summary of Iron Ore, and Iron and Steel Production, 1907-8.

Material.	1907.	1908.
	Short Tons.	Short Tons.
Iron ore shipped	312,856	238,082
Canadian iron ore charged to furnaces	244,104	209,266
Imported " "	1,117,260	1,051,445
Pig iron made	651,962	630,835
Steel ingots and castings made	706,982	588,763
Finished rolled iron and steel products made (a)	672,200	566,099
Canadian coke charged to iron furnaces	521,068	492,076
Imported " "	327,082	325,670
Pig iron imported	(b) 150,157	(c) 212,290
Iron and steel goods imported	(b) 632,868	(c) 851,843

(a) Statistics collected and published by American Iron and Steel Association.

(b) Nine months ending March, 1907.

(c) Twelve months ending March, 1908.

The figures given do not show the total quantities of iron and steel goods imported, as in many cases the quantities are not given in the trade returns.

IRON ORE.

The total production (shipments) of iron ore from mines in Canada in 1908 was 238,082 tons valued at \$568,189 at shipping point, as compared with 312,856 tons valued at \$666,941 in 1907, and 248,831 tons valued at \$522,242 in 1906. By provinces the production during the past three years was as follows:—

IRON.—TABLE 1.
Production of Iron Ore by Provinces, 1906-7-8.

Provinces.	1906.		1907.		1908.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
Nova Scotia	97,820	151,386	89,839	137,161	11,802	17,620
Quebec.	9,933	32,938	12,748	34,956	10,103	22,094
Ontario	141,078	337,918	207,769	488,324	216,177	528,475
British Columbia...			2,500	6,500		
	248,831	522,242	312,856	666,941	238,082	568,189

The production during 1907 and 1908, classified as magnetites, hematites (including brown ores), carbonates, and bog ores, was as follows:—

IRON.—TABLE 2.
Classified Production of Iron Ore, 1907-8.

Character of Ore.	1907.			1908.		
	Short Tons.	Value.	Per Ton.	Short Tons.	Value.	Per Ton.
		\$	\$ cts.		\$	\$ cts.
Magnetite.....	50,073	106,252	2 12	49,946	124,534	2 49
Hematite.....	205,795	473,532	2 30	173,164	416,127	2 40
Carbonate.....	42,740	47,701	1 11	4,869	5,434	1 12
Bog.....	14,248	39,456	2 77	10,103	22,094	2 19
	312,856	666,941	2 13	238,082	568,189	2 39

The decreased ore production in 1908, as compared with 1907, was chiefly in hematite and carbonate ores. The latter are used extensively as a flux at the Londonderry furnace, which was in operation for thirty-eight days only, in 1908. The shipments from the Helen mine at Michipicoten were also somewhat less than in 1907.

The magnetites represent shipments mainly from eastern Ontario, but include in 1907 shipments from Atikokan, as well as small shipments from the Barachois mine, Cape Breton, and Texada island, B.C.; while in 1908 a small shipment of magnetite was made from the deposit being developed at Moose mountain, Ontario.

The hematites include the ores mined at Torbrook and Acadia mines, Nova Scotia (from the latter of which the carbonate ores are also obtained), and the Helen mine, Michipicoten. The bog ores are obtained and used in the Province of Quebec, but include, in 1907, a small shipment from Quatsino sound in Vancouver island, B.C.

A record of the production of iron ore in past years is shown in Tables 3 and 4 following:—

IRON.—TABLE 3.

Production of Iron Ore by Provinces, 1886-1908.

Calendar Year.	Nova Scotia.	Quebec.	Ontario.	British Columbia.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.
1886.....	44,388	.....	16,032	3,941	64,361
1887.....	43,532	13,404	16,598	2,796	76,330
1888.....	42,611	10,710	16,894	8,372	78,587
1889.....	54,161	14,533	.....	15,487	84,181
1890.....	49,206	22,305	.....	.....	76,511
1891.....	53,649	14,380	.....	950	68,979
1892.....	78,258	22,690	.....	2,300	103,248
1893.....	102,201	22,076	.....	1,325	125,602
1894.....	89,379	19,492	.....	1,120	109,991
1895.....	83,792	17,783	.....	1,222	102,797
1896.....	58,810	17,630	15,270	196	91,906
1897.....	23,400	22,436	2,770	2,099	50,705
1898.....	19,079	17,873	21,111	280	58,343
1899.....	28,000	19,420	25,126	2,071	74,617
1900.....	18,940	19,000	82,950	1,110	122,000
1901.....	18,619	15,489	272,538	7,000	313,646
1902.....	16,172	18,524	359,288	10,019	404,003
1903.....	40,335	12,035	209,634	2,290	264,294
1904.....	61,293	16,152	141,601	.....	219,046
1905.....	84,952	12,681	193,464	.....	291,097
1906.....	97,820	9,933	141,078	.....	248,831
1907.....	89,839	12,748	207,769	2,500	312,856
1908.....	11,802	10,103	216,177	.....	238,082

IRON.—TABLE 4.

Production of Iron Ore in Nova Scotia, 1876-1885.

Calendar Year.	Tons.	Calendar Year.	Tons.
1876.....	15,274	1881.....	39,843
1877.....	16,879	1882.....	42,135
1878.....	36,600	1883.....	52,410
1879.....	29,989	1884.....	54,885
1880.....	51,193	1885.....	48,129

Nova Scotia.—Although there are two important iron smelting centres in this Province, Sydney and Sydney Mines on the one hand, and Londonderry on the other, the latter is the only furnace at which Nova Scotia ores are now used. The Sydney furnaces employ Newfoundland ores almost exclusively. The local ore production is obtained mainly from the Acadia mines at Londonderry, and the Torbrook mines in Annapolis county, both operated by the Londonderry Iron & Mining Co., Ltd. The total shipments in 1908 were only 11,802 tons, as compared with 89,839 tons in 1907, the Londonderry furnace having been shut down the greater part of the year. In 1907 shipments were made from the Brookfield mine and from Barachois, Cape Breton, in addition to the mines already mentioned.

A comprehensive report on the iron ores of Nova Scotia, by Dr. J. E. Woodman, has recently been published by the Mines Branch.

Quebec.—In this Province bog ores are mined in the counties of Champlain, Joliette, Drummond, Nicolet, St. Maurice, and Vaudreuil, and smelted in small charcoal furnaces at Radnor Forges and Drummondville. In 1908, there were 10,103 tons of these bog ores shipped to the above-mentioned furnaces, as compared with 12,748 tons in 1907. Magnetite ores from Ontario are used with these ores in the Radnor furnaces.

Ontario.—In this Province the production was obtained from four mines in 1908, and five in 1907. The largest output is secured from the Helen mine at Michipicoten. This ore, which is mainly a red hematite, is shipped to the blast furnaces at Sault Ste. Marie, Midland, and Hamilton, and to the United States market. About 1,400,000 tons have been shipped during the past nine years.

In the western part of the Province the Atikokan mine was operated during 1907; the ore, a magnetite, being shipped to the new blast furnace at Port Arthur. Neither mine nor furnace, however, was worked during 1908.

The Moose Mountain mine, thirty miles north of Sudbury, which has been undergoing development for several years, made a small shipment in 1908. The ore, a magnetite, is shipped via the Canadian Northern railway to Key Harbour, a port on Georgian bay, whence shipments can be made to any of the lake

ports. This mine will probably supply a considerable tonnage of ore during the next few years.

In eastern Ontario, shipments of magnetite were made in 1907 from the Wilbur and Radnor mines on the Kingston and Pembroke railway, and from the Mineral Range mine on the Central Ontario railway, to the blast furnaces at Sault Ste. Marie, Midland, and Deseronto, Ont., and Radnor Forges, Que., small quantities being also shipped to the Ontario Iron & Steel Co., at Welland, Ont., and to the Electric Reduction Co., at Buckingham, Que. In 1908 the Radnor mine was not operated; the Mineral Range mine was worked under lease by the Canada Iron Furnace Co., shipments being made to their furnaces at Midland and Radnor Forges, Que.; while the output from the Wilbur mine was shipped to Sault Ste. Marie.

British Columbia.—This Province is not as yet an important producer of iron ore. Small shipments have been made from time to time, chiefly from Texada island. This ore is a magnetite, and about 1,000 tons are reported as having been shipped in 1907; in addition, about 1,500 tons of bog ore were shipped from Quatsino sound according to the provincial mineralogist. No shipments were made in 1908.

Following is a list of the principal producers of iron ore:—

Name of Owner.	Address.	Name of Mine.	Location of Mine.
Nova Scotia Steel & Coal Co., Ltd...	New Glasgow, N.S.	Barachois.....	Barachois, C.B.
Londonderry Iron & Mining Co.....	Montreal, Que	{ Acadia.....	Colchester co., N.S.
		{ Brookfield....	Colchester co., N.S.
		{ Torbrook.....	Annapolis, N.S.
*J. McDougall & Co.....	Montreal, Que.....	Bog ores.....	Drummond, Nicolet
*Canada Iron Furnace Co.....	Montreal, Que.....	Bog ores.....	and other counties.
*Canada Iron Furnace Co.....	Montreal, Que.....	Radnor.....	Gratton tp., Renfrew
			county, Ont.
Wilbur Iron Ore Co., Ltd.....	Toronto, Ont.....	Wilbur mine...	Levant tp., Lanark
			county, Ont.
Mineral Range Iron Mining Co., Ltd.	Bessemer, Ont.....	Mineral range...	Mayo tp., Hastings
			county, Ont.
The Lake Superior Corporation....	Sault Ste. Marie, Ont.	Helen mine.....	Michipicoten, Ont.
Moose Mountain, Ltd.....	Selwood, Ont.	Moose mountain	Hutton tp., Nipissing
			dist., Ont.
Atikokan Iron Co., Ltd.....	Port Arthur, Ont...	Atikokan.....	Rainy River dist., Ont.
Puget Sound Iron Co.....	Van Anda, B.C.....	.....	Texada island, B.C.
		Bog ore.....	Quatsino sound, B.C.

* Consolidated under the Canada Iron Corporation, Limited.

IMPORTS AND EXPORTS.

During the past thirteen years the iron smelting industry in Canada has had to draw more and more upon imported supplies of iron ore, a large portion of these supplies being, however, derived from Newfoundland, which can hardly be looked upon as a foreign source. Still for purposes of commerce it has to be so considered.

The total consumption of iron ore in Canadian furnaces in 1908 was 1,246,144 short tons, made up of 194,699 tons of Canadian ore and 1,051,445 tons of imported ore. The Canadian production was, therefore, only about 19 per cent of our requirements. Previous to 1896 the furnaces were supplied altogether by Canadian ores. The quantities of Canadian and imported ores annually charged to blast furnaces since 1887 are shown in Table 10. The Department of Customs does not separately publish statistics of iron ore imports.

Since the opening of the Helen mine at Michipicoten considerable quantities of iron ore have been exported to the United States. The statistics of exports for both calendar and fiscal years are shown in the two tables following, the statistics for the fiscal year having been added, to compare with the record of imports of iron ore into the United States from Canada, as published in the 'Foreign Commerce and Navigation of the United States,' Washington, D.C., and shown in Table 6a. It so happened that from 1901 to 1906 the figures in the Canadian reports were inaccurate, owing to reasons explained in foot-notes to the tables.

IRON.—TABLE 5.

Exports of Iron Ore. Calendar Years, 1893-1908.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1893.....	2,419	7,590	1901*.....	306,199	762,283
1894.....		21,294	1902*.....	428,901	1,065,019
1895.....	1,571	3,909	1903*.....	368,233	922,571
1896.....	1,033	1,911	1904*.....	168,828	401,738
1897.....	403	811	1905*.....	168,289	407,581
1898.....	182	278	1906.....	74,778	149,177
1899.....	4,145	9,538	1907.....	25,901	45,907
1900.....	5,527	13,511	1908.....	(a)	.....

* The export figures for the five years indicated are incorrect owing to a duplication of entries.

(a) The figures of the Trade Report for this year include ferro-products, and are, therefore, omitted.

IRON.—TABLE 6.

Exports of Iron Ore. Fiscal Years, 1879-1908.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1879.....	3,562	7,530	1894.....	1,859	9,026
1880.....	30,524	76,474	1895.....	2,315	5,743
1881.....	44,677	114,850	1896.....	14	35
1882.....	43,835	135,463	1897.....	1,320	2,492
1883.....	44,914	138,775	1898.....	360	402
1884.....	25,308	66,549	1899.....	1,849	4,968
1885.....	54,367	132,074	1900.....	4,327	7,689
1886.....	7,542	23,039	1901*.....	58,401	150,657
1887.....	23,345	71,934	1902*.....	525,983	1,303,901
1888.....	13,544	39,945	1903*.....	293,510	733,230
1889.....	24,752	60,289	1904*.....	233,850	579,883
1890.....	13,811	31,376	1905*.....	224,908	540,909
1891.....	14,648	32,582	1906*.....	148,040	345,540
1892.....	7,707	36,935	1907†.....	34,191	65,367
1893.....	7,811	26,114	1908.....	26,310	46,686

* See foot-note to Table 5. † Nine months ending March 31, 1907.

IRON.—TABLE 6a.

Imports of Iron Ore into the United States from Canada, 1893-1908.*

Year ending June 30.	Short Tons.	Value.	Year ending June 30.	Short Tons.	Value.
		\$			\$
1893.....	7,706	17,186	1901.....	34,453	76,159
1894.....	301	756	1902.....	309,527	685,540
1895.....	2,681	10,114	1903.....	144,725	320,263
1896.....	39	142	1904.....	126,995	283,765
1897.....	2,535	5,243	1905.....	120,241	245,623
1898.....	1,313	2,904	1906.....	113,809	220,112
1899.....	2,585	5,120	1907.....	34,731	52,765
1900.....	4,477	5,550	1908.....	32,124	55,617

* Compiled from the 'Foreign Commerce and Navigation of the United States.'

PIG IRON AND STEEL.

The total production of pig iron in Canadian furnaces in 1908 was 630,835 short tons (563,246 long tons) valued at the furnace at \$8,111,194, as compared with a production of 651,962 short tons (582,109 long tons) valued at \$9,125,226 in 1907, and 598,411 short tons (534,296 long tons) valued at \$7,955,136 in 1906. The year 1907 was a year of maximum output in the Canadian iron industry. The business depression of 1908, following the financial panic of that year in the United States, resulted in a falling off of only 21,127 tons, or 3·2 per cent in the output of pig iron in Canada in 1908. This decrease is insignificant compared to that which took place in the United States, where the pig iron production in 1908 was over 38 per cent less than the production in 1907.

These figures of production do not include the output from two electric furnace plants making ferro-products, situated at Welland, Ontario, and Buckingham, Que., of which returns were not received.

Of the total output of pig iron during 1908 about 6,709 tons valued at \$171,383 were made with charcoal as fuel, and 624,126 tons valued at \$7,939,811 with coke. In 1907 the quantity made with charcoal was 10,047 tons valued at \$262,004, and with coke 641,915 tons valued at \$8,893,222.

According to the American Iron and Steel Association, which has collected and published statistics of iron and steel production in Canada, the production of basic pig iron in 1908 amounted to 375,659 short tons, as against 382,208 short tons in 1907; and the production of Bessemer pig iron was 126,848 short tons in 1908, as against 173,499 tons in 1907.

The total production of pig iron in 1907 and 1908 is shown by provinces in the following table, the average values per ton being also indicated. In the case of Nova Scotia a large proportion of the pig iron is directly converted to steel, and in large part the value is estimated and does not necessarily represent a market value. The Quebec production is entirely charcoal iron of a high grade.

IRON.—TABLE 7.

Production of Pig Iron by Provinces, 1907-8.

Province.	1907.			1908.			Percentage increase or decrease in quantity.
	Tons.	Value.	Value per ton.	Tons.	Value.	Value per ton.	
		\$	\$		\$	\$	
Nova Scotia.....	366,456	4,211,913	11 49	352,642	3,554,540	10 08	(d) 3·7
Quebec.....	10,047	232,004	23 09	6,709	171,383	25 55	(d) 33·2
Ontario.....	275,459	4,681,309	16 99	271,484	4,385,271	16 15	(d) 1·4
Total	651,962	9,125,226	13 99	630,835	8,111,194	12 86	(d) 3·2

The proportions of the whole contributed by the several provinces were, in 1908: Nova Scotia, 56 per cent; Ontario, 43 per cent; and Quebec about 1 per cent. The provinces have maintained this relative order of importance in pig iron production during the past eight years. During the past four years the production has exceeded 500,000 tons annually; while from 1898 to 1894 the production ranged from 100,000 tons to 300,000 tons per annum.

Statistics of the total production of pig iron since 1887 by provinces are given in Table 8.

IRON.—TABLE 8.

Annual Production of Pig Iron by Provinces, 1887-1908.

Year.	NOVA SCOTIA.		ONTARIO.		QUEBEC.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1887.....	19,320	250,000			5,507	116,192	24,827	366,192
1888.....	17,556	211,403			4,243	101,832	21,799	313,235
1889.....	21,289	383,202			4,632	116,670	25,921	499,872
1890.....	18,382	262,608			3,390	69,080	21,772	331,688
1891.....	21,353	309,527			2,538	59,374	23,891	368,901
1892.....	40,049	583,556			2,394	53,865	42,443	637,421
1893.....	46,472	553,408			9,475	236,875	55,947	790,283
1894.....	41,344	449,533			8,623	196,914	49,967	646,447
1895.....	35,192	417,083			7,262	169,653	42,454	586,736
1896.....	32,351	400,829	28,302	368,942	6,615	154,358	67,268	924,129
1897.....	22,500	230,000	26,115	291,466	9,392	217,235	58,007	738,701
1898.....	21,627	221,677	48,253	530,789	7,135	159,929	77,015	912,395
1899.....	31,100	404,300	64,749	808,157	7,094	164,849	102,943	1,377,306
1900.....	28,133	421,995	62,387	938,725	6,055	140,978	96,575	1,501,698
1901.....	151,130	1,764,017	116,371	1,599,413	6,875	149,493	274,376	3,512,923
1902.....	237,244	2,477,767	112,688	1,584,273	7,970	181,501	357,902	4,243,541
1903.....	201,246	2,186,273	87,004	1,345,464	9,635	210,973	297,885	3,742,710
1904.....	164,488	1,700,130	127,845	1,746,126	11,121	241,729	303,454	3,687,985
1905.....	261,014	2,440,722	256,704	3,868,197	7,588	166,267	525,306	6,475,186
1906.....	315,008	3,439,217	275,558	4,338,275	7,845	177,644	598,411	7,955,136
1907.....	366,456	4,211,913	275,459	4,581,309	10,047	232,004	651,962	9,125,226
1908.....	352,642	3,554,540	271,484	4,385,271	6,709	171,383	630,835	8,111,194

The quantities of iron ore, coke, charcoal, limestone, etc., consumed in blast furnaces in 1907 and 1908 are shown as follows:—

IRON.—TABLE 9.

Ore, Fuel, and Flux charged to Blast Furnaces, in years 1907-8.

	1907.			1908.		
	Quantity.	Value.	Canadian and Imported.	Quantity.	Value.	Canadian and Imported.
		\$	%		\$	%
Canadian iron ore and mill cinder..... Tons.	244,104	726,633	18 }	209,266	741,491	17 }
Imported iron ore..... "	1,117,260	2,493,921	82 }	1,051,445	2,432,484	83 }
Canadian coke..... "	521,068	1,654,079	61 }	492,076	1,604,411	60 }
*Imported coke..... "	327,082	1,731,098	39 }	325,670	1,525,711	40 }
Charcoal..... Bus.	1,682,085	128,495	.....	1,121,990	85,738	.....
Canadian limestone..... Tons.	395,503	298,097	81 }	418,661	289,705	87 }
Imported "..... "	92,959	77,738	19 }	64,404	53,436	13 }

*Including coke made from imported coal.

Previous to 1896 the pig iron made was entirely from Canadian ore. Since that date, however, increasing quantities of imported ore have been used, as well as imported fuels and fluxes, until in 1908 about 83 per cent of the ore charged, 40 per cent of the coke, and 13 per cent of the limestone were imported. This condition is, of course, due not to non-existence of the raw materials in the country; but rather to questions of costs and transportation affecting each furnace.

Thus at Sydney, N.S., the ore used is practically all imported from Newfoundland, while the fuel and flux are of Canadian origin. At Londonderry the industry is based entirely on Canadian materials, as is also the case in Quebec province. In Ontario a portion of the ore is imported—65 per cent of the charge in 1908—the coke fuel is all imported, and in the cases of the furnaces at Sault Ste. Marie and Port Arthur the flux is imported.

Statistics showing the quantities of ore, fuel, and flux, charged to Canadian blast furnaces since 1887, are shown in the following table:—

IRON.—TABLE 10.

Iron Ore, Fuel, and Flux charged to Furnaces since 1887.

Calendar Year.	IRON ORE CHARGED.		FUEL CHARGED.			Limestone
	Canadian.	Imported.	Charcoal.	*Coke from Cana- dian Coal.	Imported Coke.	
	(a)					
	Tons.	Tons.	Bus.	Tons.	Tons.	Tons.
1887.....	60,434		940,400	33,581		17,171
1888.....	54,956		804,286	30,228		16,857
1889.....	65,670		755,800	36,333		22,122
1890.....	57,304		539,860	34,073		18,478
1891.....	60,933		441,812	32,796		11,377
1892.....	96,948		1,121,365	52,622		22,967
1893.....	124,053		1,302,720	65,332		27,797
1894.....	108,871		1,173,970	60,026		35,101
1895.....	93,208		789,561	51,629		31,585
1896.....	96,560	46,300	756,600	50,067	33,990	37,462
1897.....	53,658	55,722	1,031,800	35,800	27,810	31,273
1898.....	57,881	77,107	836,400	31,952	50,407	33,913
1899.....	66,384	120,650	1,928,025	44,844	64,648	51,826
1900.....	71,341	112,042	1,799,737	45,021	59,345	52,966
1901.....	156,613	361,010	1,835,736	207,835	115,367	169,399
1902.....	125,664	559,381	2,146,623	362,208	112,314	293,594
1903.....	82,035	485,911	2,322,030	350,190	96,540	277,452
1904.....	180,932	454,671	3,477,470	257,132	130,210	211,278
1905.....	116,974	861,847	4,404,394	365,897	243,882	369,715
1906.....	221,733	982,740	2,168,476	462,672	304,676	456,036
1907.....	244,104	1,117,260	1,682,085	521,068	327,082	488,462
1908.....	209,266	1,051,445	1,121,990	492,076	325,670	483,065

(a) Includes mill cinder.

*Includes for the first ten years small quantity of coal.

In the tabulated statement showing the total mineral production of Canada, the production of pig iron from Canadian ore only is given. This has been arrived at by separating the total production at each furnace into two classes, viz., pig iron from Canadian ore and pig iron from imported ore, the separation being made on the basis of the Canadian and imported ores entering into the production of pig iron at each respective furnace.

The production during the past thirteen years separated in this way has been as follows:—

Calendar Year.	Pig iron from Canadian ore.	Pig iron from Imported ore.	Calendar Year.	Pig iron from Canadian ore.	Pig iron from Imported ore.
	Tons.	Tons.		Tons.	Tons.
1896.....	40,720	26,548	1903.....	42,052	255,833
1897.....	26,200	31,807	1904.....	68,297	235,157
1898.....	30,553	46,462	1905.....	68,170	457,136
1899.....	34,244	63,699	1906.....	104,660	493,751
1900.....	35,387	61,188	1907.....	107,599	544,363
1901.....	83,100	191,276	1908.....	99,420	531,415
1902.....	71,664	286,238			

Of sixteen completed furnaces fifteen were in blast in 1908, for varying periods of time. The operating companies, with numbers and capacities of furnaces, were as follows:—

Dominion Iron and Steel Co., Sydney, C.B.: four completed furnaces of 275 tons capacity each per day; operated throughout 1907 and 1908, with the exception of one furnace which was idle during nine and a half months of 1908.

Nova Scotia Steel and Coal Company, Limited, New Glasgow, N.S.: one furnace at Sydney Mines, C.B., of 200 tons capacity; operated throughout 1907, and eleven months of 1908.

Londonderry Iron and Mining Co., Limited, Londonderry, N.S.: one furnace of 100 tons capacity; operated about nine months in 1907, and thirty-eight days in 1908.

John McDougall & Co., Montreal, Que.: two small furnaces of seven and eight tons capacity at Drummondville, Que.; one furnace operated throughout 1907, and both for about half of 1908.

Canada Iron Furnace Company, Limited, Montreal, Que.: one furnace of fifty tons daily capacity at Radnor Forges, Que.; operated throughout 1907, and six months of 1908.

One furnace of 150 tons at Midland, Ont.: operated nine and a half months in 1907, and eleven months in 1908.

Deseronto Iron Company, Limited, Deseronto, Ont.: one furnace with a daily capacity of 50 tons; operated three and a half months in 1907, and two months in 1908.

Hamilton Steel and Iron Company, Hamilton, Ont.: two furnaces, one of 200 tons capacity; operated throughout 1907, and forty-nine days in 1908; a second furnace of 300 tons capacity, operated fifty-two days in 1907, and throughout 1908.

Algoma Steel Company, Limited, Sault Ste. Marie, Ont.: two furnaces at Steelton near Sault Ste. Marie, of 250 tons capacity each; operated ten and a half months in 1907, and seven and a half months in 1908.

The Atikokan Iron Company, Limited, Port Arthur, Ont.: one furnace of 100 tons capacity; operated for about five months in 1907, but idle throughout 1908.

The total daily capacity of the sixteen furnaces is about 2,665 tons.

The number of men employed in 1908 was reported as 1,380, and wages paid, \$750,224.

Of the sixteen completed furnaces ten were in blast and six idle on December 31, 1908.

The furnace plants operated by the Canada Iron Furnace Co., and John McDougall & Co., have been consolidated under one general management, known as the Canada Iron Corporation, Ltd.

Very little pig iron is exported from Canada. Considerable quantities are, however, imported. During the twelve months ending March, 1908, the imports of ordinary pig iron were 210,053 tons, valued at \$3,448,125, and of charcoal pig, 2,237 tons valued at \$45,475. The imports during the fiscal year 1907 (nine months ending March) were 150,127 tons of ordinary pig, valued at \$2,280,860, and 30 tons of charcoal pig, valued at \$675.

The annual imports of these two classes of pig iron since 1880 are shown in the following table. The duty on pig iron is \$2.50 per ton.

IRON.—TABLE 11.
Annual Imports of Pig Iron since 1880.

Fiscal Year.	PIG IRON.		CHARCOAL PIG IRON.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
1880.....	(a) 23,159	371,956			23,159	371,956
1881.....	(a) 43,630	715,997			43,630	715,997
1882.....	56,594	811,221	6,837	211,791	63,431	1,023,012
1883.....	75,295	1,085,755	2,198	58,994	77,493	1,144,749
1884.....	49,291	653,708	2,893	66,602	52,184	720,310
1885.....	42,279	545,426	1,119	27,333	43,398	572,759
1886.....	42,463	528,483	3,185	60,086	45,648	588,569
1887.....	46,295	554,388	3,919	77,420	50,214	631,808
1888.....	(b) 48,973	648,012			48,973	648,012
1889.....	(b) 72,115	864,752			72,115	864,752
1890.....	(b) 87,613	1,148,078			87,613	1,148,078
1891.....	(b) 81,317	1,085,929			81,317	1,085,929
1892.....	(b) 68,918	886,485			68,918	886,485
1893.....	56,849	682,269	5,944	84,358	62,793	766,567
1894.....	42,376	483,787	2,906	34,968	45,282	518,755
1895.....	31,637	341,259	2,780	31,171	34,417	372,430
1896.....	36,131	394,591	917	11,726	37,048	406,317
1897.....	25,766	291,788	2,936	35,373	28,702	327,161
1898.....	37,186	382,103	2,250	23,533	39,436	405,636
1899.....	44,261	452,911	1,955	19,123	46,216	472,034
1900.....	49,767	811,490	1,816	38,736	51,583	850,226
1901.....	35,293	548,033	490	7,121	35,783	555,154
1902.....	39,978	585,077	38	726	40,016	585,803
1903.....	91,730	1,338,574	882	16,352	92,612	1,354,926
1904.....	62,515	894,728			62,515	894,728
1905.....	71,005	857,879			71,005	857,879
1906.....	96,797	1,401,047			96,797	1,401,047
1907*.....	150,127	2,280,860	30	675	150,157	2,281,535
1908.....	210,053	3,448,125	2,237	45,475	212,290	3,493,600

* Nine months ending March.

(a) Comprises pig iron of all kinds.

(b) These figures appear in Customs reports under heading 'iron in pigs, iron kentledge and cast-iron.'

World's production.—The production of pig iron in other countries is given hereunder for the past four years, in order to show the relative position occupied by Canada in the production of this metal.

IRON.—TABLE 12.

Production of Pig Iron in Principal Countries of the World from 1905 to 1908:
metric tons 2,204.62 lbs.

	1905.	1906.	1907.	1908.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
United States.....	23,340,258	25,706,882	26,193,863	16,190,994
Germany.....	10,987,623	12,478,067	13,045,760	11,813,511
United Kingdom.....	9,746,221	10,311,778	10,082,638	9,438,477
France.....	3,077,000	3,319,032	3,588,949	3,391,150
Russia.....	2,125,000	2,350,000	2,768,220	2,748,000
Austria Hungary.....	1,372,300	1,403,500	1,405,000	1,390,000
Belgium.....	1,310,290	1,431,160	1,427,940	1,206,440
Sweden.....	531,200	552,250	603,100	563,300
Canada.....	476,549	542,869	591,449	572,283
Spain.....	383,100	387,500	385,000	375,000
Italy.....	31,300	30,450	32,000	32,500
Other countries.....	655,000	650,000	556,900	550,000
Totals.....	54,035,841	59,163,488	60,680,819	48,271,655

* With the exception of those for Canada these figures are taken from the Mineral Industry, New York, 1908.

FERRO-PRODUCTS.

These are made in small quantities in electric furnaces at Buckingham, Que., and Welland, and Sault Ste. Marie, Ont. The operating companies, however, have not furnished the Department with any returns of production.

At Buckingham the Electric Reduction Company, Ltd., has for a number of years been making ferro-chrome, ferro-silicon, ferro-phosphorus, and other products. At Welland, Ont., the Electro Metals Company, Ltd., has four furnaces of from 1,000 to 1,500 horse-power each, in which ferro-silicon is made, the daily production being from five to eight tons. This firm is also conducting experiments on the reduction of iron ores in electric furnaces. The Alogma Steel Co., at Sault Ste. Marie, makes ferro-silicon for its own consumption.

The imports of ferro-manganese, ferro-silicon, etc., into Canada since 1887 are shown in Table 13, the statistics indicating to some extent the home market for these products.

IRON.—TABLE 13.

Imports of Ferro-Manganese, etc., 1887-1908.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
*1887.....	123	1,435	†1898.....	1,418	22,516
*1888.....	1,883	29,812	†1899.....	1,160	22,539
*1889.....	5,868	72,108	†1900.....	1,149	39,064
*1890.....	696	18,895	†1901.....	1,512	38,954
*1891.....	2,707	40,711	†1902.....	6,513	150,977
*1892.....	1,311	23,930	†1903.....	6,350	162,710
*1893.....	529	15,858	†1904.....	2,975	75,554
*1894.....	284	9,885	†1905.....	12,935	246,815
†1895.....	164	5,408	†1906.....	15,023	462,739
†1896.....	652	12,811	†1907 (9 months).....	16,414	610,875
†1897.....	426	9,233	†1908.....	17,417	612,062

* These amounts include: ferro-manganese, ferro-silicon, spiegel, steel bloom ends and crop ends of steel rails, for the manufacture of iron or steel.

† Ferro-silicon, spiegeleisen, and ferro-manganese.

STEEL.

Returns for the year 1908 from eight companies making steel showed a total output of ingots and castings of 588,763 short tons valued at \$10,916,602, as compared with 706,982 tons valued at \$15,612,590 from seven companies in 1907.

These figures are made up as follows:—

IRON.—TABLE 14.

Production of Steel, 1907 and 1908.

Description.	1907.		1908.	
	Short Tons.	Value.	Short Tons.	Value.
		\$		\$
Ingots, open-hearth (basic).....	459,240	9,157,703	443,442	7,684,277
" Bessemer (acid).....	225,989	4,293,791	135,557	2,535,287
Castings, open-hearth.....	20,602	2,031,380	9,051	617,126
Other steels	1,151	129,716	713	79,912
Total	706,982	15,612,590	588,763	10,916,602

Statistics of production of steel ingots and castings since 1894 are given in the following table, the figures from 1894 to 1906 inclusive having been collected and published by the American Iron and Steel Association, those for 1907 and 1908, being as above.

IRON.—TABLE 15.

Annual Production of Steel Ingots and Castings, 1894-1908.

Calendar Year.	Short Tons.	Calendar Year.	Short Tons.	Calendar Year.	Short Tons.
1894.....	28,767	1899.....	24,640	1904.....	166,381
1895.....	19,040	1900.....	26,406	1905.....	451,863
1896.....	17,920	1901.....	29,214	1906.....	639,396
1897.....	20,608	1902.....	203,881	1907.....	706,982
1898.....	24,125	1903.....	203,296	1908.....	588,763

Following is a list of firms making steel:—

Dominion Iron & Steel Co., Sydney, C.B.
 Nova Scotia Steel & Coal Co., New Glasgow, N.S.
 Montreal Steel Works, Ltd., Montreal, Que.
 The Algoma Steel Co., Sault Ste. Marie, Ont.
 The Hamilton Steel & Iron Co., Hamilton, Ont.
 The Wm. Kennedy Sons., Ltd., Owen Sound, Ont.
 The Ottawa Steel Castings Co., Ltd., Ottawa, Ont.
 The Ontario Iron & Steel Co., Ltd., Welland, Ont.

The American Iron and Steel Association collects and publishes annually very complete statistics of the production of iron and steel in Canada, as well as in the United States, and we are indebted to this authority¹ for the following statistics of the production of finished rolled iron and steel in Canada:—

‘Finished Rolled Iron and Steel.—The production of finished rolled iron and steel in Canada in 1908 amounted to about 496,517 long tons, as compared with about 600,179 long tons in 1907, a decrease of 103,662 tons, or over 17·2 per cent. Of the total production in 1908 about 65,505 tons were iron, and about 431,012 tons were steel, against about 81,093 tons of iron and about 519,086 tons of steel in 1907.

‘The following table gives the production of leading articles of finished rolled iron and steel in Canada in the last five years:—

Products—Gross Tons.	1904.	1905.	1906.	1907.	1908.
Rails.....	36,216	178,885	312,877	311,461	268,692
Structural shapes and wire rods.....	11,195	48,850	48,351	65,541	41,520
Plates and sheets.....	3,102	4,944	15,202	18,493	11,656
Nail plate.....	5,030	4,110	2,183	1,720	2,126
All other finished rolled forms.....	124,495	149,037	193,129	202,964	172,523
Total.....	180,038	385,826	571,742	600,179	496,517

¹ Annual Statistical Report of the American Iron and Steel Association for 1908, p. 82.

'The following table gives the production of all kinds of finished rolled iron and steel in Canada from 1895 to 1908, in gross tons:—

Years.	Gross Tons.	Years.	Gross Tons.	Years.	Gross Tons.
1895.....	66,402	1900.....	100,690	1905.....	385,826
1896.....	75,043	1901.....	112,007	1906.....	571,742
1897.....	77,021	1902.....	161,485	1907.....	600,179
1898.....	90,303	1903.....	129,516	1908.....	496,517
1899.....	110,642	1904.....	180,038		

'Forged Iron and Steel.—The total production of forged iron and steel by rolling mills and steel works in Canada in 1908 amounted to about 14,738 tons, of which about 2,300 tons were iron, and about 12,438 tons were steel.

'Cut Nails and Wire Nails.—In 1908 the rolling mills and steel works in Canada which operated cut nail or wire nail factories, produced about 298,000 kegs of steel cut nails and steel wire nails of 100 pounds each, as compared with about 313,200 kegs in 1907, and about 347,000 kegs in 1906.

'Active Rolling Mills and Steel Works.—In 1908 there were twenty-five works in five provinces which made steel ingots or castings, or rolled iron or steel into finished forms, against twenty-two works in five provinces in 1907, a gain of three works. Of the total in 1908 there were nineteen works which rolled iron or steel into finished forms, and six works which made steel ingots or castings, but not finished forms of rolled iron or steel; while in 1907 the number of works which rolled iron or steel into finished forms was sixteen, and the number of works which did not produce finished rolled forms was six. There were two idle rolling mills and steel works in Canada in 1908.

'Of the twenty-five rolling mills and steel works in Canada which were active in 1908, five were located in Nova Scotia, six in Quebec, twelve in Ontario, one in New Brunswick, and one in Manitoba.'

BOUNTIES.

Bounties on iron and steel made in Canada were provided for by the Dominion government in 1897 (Chapter 6, Statutes of Canada, 1897). This Act was amended in 1899 (Chapter 8, Statutes of Canada, 1899), and again in 1903 (Chapter 68, Statutes of Canada, 1903). The latter Act provided for the payment of bounty until June 30, 1907. On April 27, 1907, a new Act was passed (Chapter 24, Statutes of Canada, 1907), providing for the further payment of bounties from January 1, 1907, to December 31, 1910, and in the case of pig iron made by electric smelting until December 31, 1912. The Act is as follows:—

An Act Respecting Bounties on Iron and Steel made in Canada.

(Assented to, 27th April, 1907.)

His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. The Governor in Council may authorize the payment out of the Consolidated Revenue Fund of the following bounties on the undermentioned articles when manufactured in Canada for consumption therein, viz.:—

(a) In respect of pig iron manufactured from ore, on the proportion from Canadian ore produced during the calendar year:—

1907..	\$2 10 per ton.
1908..	2 10 “
1909..	1 70 “
1910..	0 90 “

(b) In respect of pig iron manufactured from ore, on the proportion from foreign ore produced during the calendar year:—

1907..	\$1 10 per ton.
1908..	1 10 “
1909..	0 70 “
1910..	0 40 “

(c) On puddled iron bars manufactured from pig iron made in Canada during the calendar year:—

1907..	\$1 65 per ton.
1908..	1 65 “
1909..	1 05 “
1910..	0 60 “

(d) In respect of rolled, round wire rods not over three-eighths of an inch diameter, manufactured in Canada from steel produced in Canada from ingredients of which not less than fifty per cent of the weight thereof consists of pig iron made in Canada, when sold to wire manufacturers for use, or when used in making wire in their own factories in Canada, on such wire rods made after the thirty-first day of December, one thousand nine hundred and six, six dollars per ton.

(e) In respect of steel manufactured from ingredients of which not less than fifty per cent of the weight thereof consists of pig iron made in Canada, on such steel made during the calendar year:—

1907..	\$1 65 per ton.
1908..	1 65 “
1909..	1 05 “
1910..	0 60 “

2. No bounty shall be paid under the foregoing provisions in respect of iron or steel made in Canada by electric process after the thirty-first day of December, one thousand nine hundred and eight.

1. The Governor in Council may authorize the payment out of the Consolidated Revenue Fund of the following bounties on the undermentioned articles when manufactured in Canada for consumption therein, viz.:—

(a) On pig iron manufactured from Canadian ore by the process of electric smelting during the calendar year:—

1909..	\$2 10 per ton.
1910..	2 10 “
1911..	1 70 “
1912..	0 90 “

(b) On steel manufactured by electric process direct from Canadian ore, and on steel manufactured by electric process from pig iron smelted in Canada by electricity from Canadian ore during the calendar year:—

1909..	\$1 65 per ton.
1910..	1 65 “
1911..	1 05 “
1912..	0 60 “

2. Bounty, as on pig iron under this section, may be paid upon the molten iron from the ore which in the electric furnace enters into the manufacture of steel by the direct process, the weight of such iron to be ascertained from the weight of the steel so manufactured.

3. No bounty shall be paid on steel ingots from which steel blooms and billets for exportation from Canada are manufactured.

4. The Governor in Council may make regulations to carry out the intention of this Act.

5. The Minister of Trade and Commerce shall be charged with the administration of this Act.

6. Chapter 8 of the Statutes of 1899, Chapter 68 of the Statutes of 1903, and Chapter 39 of the Statutes of 1904, are repealed.

7. This Act shall be deemed to have come into force on the first day of January, one thousand nine hundred and seven.’

The amount of bounties paid on iron and steel during the calendar years 1907 and 1908, as kindly furnished by the Department of Trade and Commerce, was as follows:—

IRON.—TABLE 16.

Bounty paid during the Calendar Years 1907 and 1908.

Product on which Bounty was paid.	1907.		1908.	
	Tons.	Bounty.	Tons.	Bounty.
		\$		\$
Pig iron made from Canadian ore.	95,914·97	201,421 47	101,647	213,458 34
" " imported ore.	537,803·45	591,583 80	517,427	569,169 93
Total pig iron.	633,718·42	793,005 27	619,074	782,628 27
Steel ingots.	666,589·87	1,099,873 37	556,289	917,876 63
Steel wire rods.	68,736·22	412,417 26	49,630	297,778 68
Totals.	1,369,044·51	2,305,295 90	1,224,993	1,998,283 58

The amount of bounties paid to the several companies, and the quantities of the different products on which the bounties were paid, as compiled from the reports of the Auditor General, are shown in the accompanying tables for the fiscal period of nine months ending March, 1907, and twelve months ending March, 1908.

Bounties paid on Pig Iron manufactured in Canada during nine months ending March, 1907.

Company.	On Pig Iron from Canadian Ore.		On Pig Iron from Imported Ore.		Total Bounties.
	Tons.	Bounties.	Tons.	Bounties.	
		\$ cts.		\$ cts.	\$ cts.
Algoma Steel Co., Ltd.	16,567·49	21,568 50	99,533·63	83,087 44	104,655 94
Canada Iron Furnace Co., Ltd.: Midland, Ont.	1,657·38	2,640 70	24,407·34	20,712 54	23,353 24
Radnor Forges, Que.	2,760·06	3,986 49	1,635·32	1,453 62	5,440 11
Deseronto Iron Co., Ltd.	385·00	404 25	3,135·00	2,194 50	2,598 75
Dominion Iron and Steel Co., Ltd.			161,754·42	135,631 23	135,631 23
Electric Reduction Co., Ltd.	112·00	235 20			235 20
Hamilton Steel and Iron Co., Ltd.	23,315·38	32,027 42	24,974·71	21,714 48	53,741 90
Londonderry Iron and Mining Co., Ltd.	21,013·98	28,505 79			28,505 79
John McDougall & Co.	1,412·63	2,062 58			2,062 58
Nova Scotia Steel and Coal Co.			33,600·60	29,006 54	29,006 54
	67,223·92	91,430 93	349,041·02	293,800 35	385,231 28

Bounty paid on Steel Ingots and Puddled Iron Bars, during nine months ending March, 1907.

Company.	Tons.	Bounty.
		\$ cts.
Algoma Steel Co., steel ingots.....	191,734·62	243,636 54
Dominion Iron and Steel Co., steel ingots.....	188,825·52	234,844 28
Hamilton Steel and Iron Co., steel ingots.....	39,582·43	50,220 47
" " " puddled iron bars.....	296·82	311 66
Nova Scotia Steel and Coal Co., steel ingots.....	34,789·09	46,557 84
	455,228·48	575,570 79

Bounties paid on articles manufactured from Steel, during nine months ending March, 1907.

Company.	Tons.	Bounties.
		\$ cts
Dominion Iron and Steel Co., Ltd., Sydney, C.B., steel wire rods (not more than 3" diameter) at \$6.....	40,761·175	298,567 05
Hamilton Steel and Iron Co., angles, etc., at \$3.....	7,134·740	21,404 22
Montreal Rolling Mills Co., angle bars, at \$3.....	293·730	881 19
Nova Scotia Steel and Coal Co., Ltd., angles and plates, at \$3.....	6,048·830	18,146 51
		338,998 97

Bounties paid on Pig Iron manufactured in Canada, Fiscal Year 1907-8.

Company.	ON PIG IRON FROM CANADIAN ORE.		ON PIG IRON FROM IMPORTED ORE.		Total Bounties.
	Tons.	Bounties.	Tons.	Bounties	
		\$ cts.		\$ cts.	\$ cts.
Algoma Steel Co., Ltd.	29,462·07	61,870 36	122,399·32	134,639 26	196,509 62
Atikokan Iron Co., Ltd.	8,258·22	17,210 46			17,210 46
Canada Iron Furnace Co., Ltd.: Midland, Ont.	6,591·68	13,842 52	21,346·70	23,481 38	37,323 90
Radnor Forges, Que.	5,211·60	10,944 36	2,677·13	2,944 86	13,889 22
Deseronto Iron Co., Ltd.	938·00	1,969 80	4,845·00	5,329 50	7,299 30
Dominion Iron and Steel Co., Ltd.	33·60	70 56	317,399·76	349,139 74	349,210 30
Hamilton Steel and Iron Co., Ltd.	37,083·00	77,874 28	52,079·85	57,287 81	135,162 09
Londonderry Iron and Mining Co., Ltd.	17,829·29	37,441 52			37,441 52
John McDougall & Co.	2,556·25	5,368 12			5,368 12
Nova Scotia Steel and Coal Co., Ltd.	458·00	961 80	57,673·11	63,440 42	64,402 22
	108,421·71	227,553 78	578,420·87	636,262 97	863,816 75

Bounties paid on Steel Ingots and Steel Wire Rods, Fiscal Year 1907-8.

Company.	Steel ingots at \$1.65.		Steel wire rods at \$6.	
	Tons.	Bounty.	Tons.	Bounty.
		\$ cts.		\$ cts.
Algoma Steel Co., Ltd.	204,555.08	337,515 88		
Dominion Iron and Steel Co.	322,769.81	532,570 20	57,855.81	347,134 89
Hamilton Steel and Iron Co., Ltd.	52,926.20	87,328 22		
Lake Superior Iron and Steel Co.	10,606.42	17,500 60		
Nova Scotia Steel and Coal Co.	70,929.73	117,034 04		
Ontario Iron and Steel Co.	152.59	251 77		
	661,939.83	1,092,200 71	57,855.81	347,134 89

Total bounties paid to each company for the nine months ending March 31, 1907, and for the Fiscal Year ending March 31, 1908.

Corporations.	1907.	1908.
	\$ cts.	\$ cts.
Algoma Steel Co., Ltd.	348,292 48	534,025 50
Atikokan Iron Company, Ltd.		17,210 46
Canada Iron Furnace Co., Ltd.	28,793 35	51,213 12
Deseronto Iron Co., Ltd.	2,598 75	7,299 30
Dominion Iron and Steel Co., Ltd.	669,042 56	1,228,915 39
Electric Reduction Co., Ltd.	235 20	
Hamilton Steel and Iron Co., Ltd.	125,678 25	222,490 51
Londonderry Iron and Mining Co., Ltd.	28,505 79	37,441 52
John McDougall & Co.	2,062 58	5,368 12
Lake Superior Iron and Steel Co.		17,500 60
Montreal Rolling Mills Co.	881 19	
Nova Scotia Steel and Coal Co., Ltd.	93,710 89	181,436 26
Ontario Iron and Steel Co.		251 77
	1,299,801 04	2,303,152 35

EXPORTS AND IMPORTS OF IRON AND STEEL GOODS.

The value of the exports of iron and steel products from Canada in 1908 was \$2,098,138, as compared with \$1,607,368 in 1907. Details are shown in Table 17 following:—

IRON.—TABLE 17.

Exports of Iron and Steel goods the product of Canada during the Calendar Years 1907 and 1908.

		1907.		1908.	
		Quantity.	Value.	Quantity.	Value.
			\$		\$
Stoves.....	No.	698	8,077	651	8,258
Castings, N.E.S.....	\$		33,545		28,062
Pig iron.....	Tons.	439	13,504	290	10,614
Machinery (linotype machines).....			33,926		126,590
" N.E.S.....			436,793		285,257
Sewing machines.....	No.	4,193	77,232	9,697	109,002
Typewriters.....	"	5,430	163,719	3,720	169,939
Scrap iron and steel.....	Cwt.	229,229	185,430	92,566	73,807
Hardware, tools, etc.....	\$		48,909		57,631
" N.E.S.....	"		128,417		59,304
Steel and manufactures of.....	"		477,766		1,169,674
Totals.....			1,607,368		2,098,138

The total imports of iron and steel goods, as compiled from the annual reports of Trade and Navigation, are given in Table 19, showing the imports subject to duty, and Table 20, showing the imports free of duty.

The total value of the imports during the fiscal year ending March, 1908, was \$61,819,698, as compared with a value of \$43,222,626 during the nine months ending March, 1907, and a value of \$43,235,380 during the twelve months ending June 30, 1906.

The weights or quantities are in many cases not given, so that it is not possible to state the total tonnage of iron and steel imported. A minimum estimate of the tonnage imported can, however, be arrived at by selecting those items for which the weight is given. This has been done and the results are given in Table 18. It is apparent that the imports of iron and steel during the nine months ending March, 1907, exceeded 783,025 tons; while during the twelve months ending March, 1908, the imports exceeded 1,064,133 tons.

IRON.—TABLE 18.

Imports of some Iron and Steel products of which the quantities are available.

Material.	Nine months ending March, 1907.	Twelve months end- ing March, 1908.
	Tons.	Tons.
Pig iron	150,157	212,290
Ferro-products and chrome steel	16,582	17,661
Ingots, blooms, billets, puddled bars, etc.	19,150	6,356
Scrap and scrap steel	39,945	69,213
Plates and sheets	107,701	126,172
Bars, rods, hoops, bands, etc.	106,175	98,640
Structural iron and steel	173,411	373,871
Rails and connexions.	78,288	52,706
Pipe and fittings	16,637	25,030
Nails and spikes	3,537	2,741
Wire	58,239	57,046
Forgings, castings and manufactures	13,203	22,357
Total.....	783,025	1,064,133

IRON.—TABLE 19.

Imports of Iron and Steel Goods subject to Duty.

Material.	Nine Months ending March, 1907.		Twelve Months ending March, 1908.	
	Quantity.	Value.	Quantity.	Value.
Agricultural implements, N.O.P., viz.:—				639
Binding attachments.....	1,896	12,942	5,491	44,983
Cultivators and weeders.....	5,269	17,287	2,887	87,334
Drills, seed.....	117	8,328	123	18,052
Farm, road or field rollers.....	817	4,573	11,466	6,548
Forks, pronged.....	5,620	82,759	3,446	50,988
Harrows.....	2,876	315,360	880	85,662
Harvesters, self-binding.....	220	10,402	562	26,432
Hay loaders.....	82	3,888	44	1,374
Hay tedders.....	2,043	613	4,436	1,034
Hoes.....	697	14,337	1,117	28,474
Horse rakes.....	5,832	1,047	1,729	1,207
Knives, hay or straw.....	5	23	180	223
Knives, edging.....	1,321	6,309	2,305	12,884
Lawn mowers.....	2,262	212,783	73,407	73,407
Manure spreaders.....	8,815	1,673	47,668	47,668
Mowing machines.....	230	498,444	16,551	438,129
Ploughs.....	17,818	558	1,589	1,019
Post hole diggers.....	687	18,147	1,019	41,179
Potato diggers.....	449	1,142	11,967	3,350
Rakes, N.O.P.....	4,181	10,895	531	25,688
Reapers.....	219	3,854	2,441	12,951
Scythes.....	736	289	222	463
Sickles or reaping hooks.....	163	4	4	17
Snaths.....	6,523	22,886	6,469	29,877
Spades and shovels of iron or steel, N.O.P.....			3,720	5,788
Spade and shovel blanks, and iron or steel cut to shape for the same.....		46,235		314,193
Parts of agricultural implements paying 12½ per cent and 17½ per cent.....		392,263		314,598
12½, 17½ and 20 per cent.....		48,147		75,259
All other agricultural implements, N.O.P.....		60,534		70,537
Anvils and vises.....		9,917	277,945	7,035
Cart or wagon skins or boxes.....	405,634	154,418	48,471	128,001
Springs N.O.P. and parts thereof, of iron or steel, for railway, tramway, or other vehicles.....	57,788			

IRON.—TABLE 19—Continued.
Imports of Iron and Steel Goods subject to duty.

Material.	Nine months ending March, 1907.		Twelve months ending March, 1908.	
	Quantity.	Value.	Quantity.	Value.
Axle and axle parts, N. O. P., and axle blanks and parts thereof of iron or steel for railway, tramway, or other vehicles.....				
Bar iron or steel, rolled, whether in coils, bundles, rods or bars, comprising rounds, ovals, squares and flats, N. O. P.....			43,895	136,558
Butts and hinges N. O. P.....	1,352,400	2,147,709	1,497,690	2,580,823
Canada plates, Russia iron, torn plate, and rolled sheets of iron and steel coated with zinc, spelter or other metal, of all widths or thicknesses, N. O. P.....		75,261		65,773
Castings, iron or steel, N. O. P.....	287,872	558,091	79,722	262,134
Cast iron pipe of every description.....		297,824		593,672
Cast scrap iron.....	279,505	360,203	431,034	598,358
Chains, coil chains, chain links, and chain shackles of iron or steel of $\frac{1}{8}$ diameter, and over.	13,852	198,686	26,371	458,489
Chain, malleable sprocket or link belting for blunders.....	47,815	159,365	51,991	281,304
Chains, N. O. P.....		53,603	(See free list)	
Tacks, shoe.....		62,804		52,864
Nails, brads, spikes and tacks of all kinds, N. O. P.....	3,627	547	16,735	1,038
Engines, etc.—	66,221	4,412	269,331	16,346
Locomotives for railways.....	38	180,264	195	1,235,089
Motor cars for railways and tramways.....			11	12,002
Engines, fire.....			28	19,880
" gasoline.....	2	1,953		
" steam.....	1,479	305,535	3,230	698,153
Boilers, steam.....	1,972	564,881	1,659	422,585
" N. O. P.....			1,517	274,158
Fire extinguishing machines, including sprinklers for fire protection.....			1,197	67,161
Fittings, iron or steel, for iron or steel pipe of every description.....		36,270		51,014
Flat eye-bar blanks, not punched or drilled, for use exclusively in the manufacture of bridges or of steel structural work, or in car construction.....	5,824,865	388,651	7,077,317	499,050
Pero-silicon, spiegel-eisen, and ferro-manganese.....				
Forgings of iron and steel of whatever size, shape, or in whatever stage of manufacture, N. O. P., and steel shafting, turned, compressed or polished and hammered, drawn or cold rolled iron or steel bars or shapes, N. O. P.....	16,414	610,875	89	5,224
Hardware, viz.: Builders, cabinet-makers, upholsterers, harness-makers, saddlers and carriage hardware, including curry-combs, N. O. P.....	3,052,107	151,204	3,021,923	149,219
Horse, mule and ox shoes.....		597,567		578,090
		8,758		10,212

Iron or steel billets, weighing not less than 60 lbs. per lineal yard.....	Cwt.			416,163	297,329	
Ingots, cogged ingots, blooms, slabs, puddled bars, and loops, or other forms, N. O. P., less finished than iron or steel bars, but more advanced than pig iron, except castings.....	"	383,003	467,554		94,441	135,177
" bridges or parts thereof, iron or steel structural work, columns, shapes or sec- tions, drilled, punched or in any further stage of manufacture than as rolled or cast, N. O. P.....	Tons.	67,433	194,551		244,992	645,608
Iron in pig.....	"	150,127	2,280,860		210,053	3,448,125
" charcoal.....	\$	30	675		2,237	45,475
Locks of all kinds.....			256,835			336,405
Machines, machinery, etc.:—	No.	350	531,028		674	912,371
Automobiles and motor vehicles of all kinds.....	\$					136,858
" " parts of						
Fanning mills.....	No.	1,307	18,202		1,648	23,051
Grain crushers.....	"	42	1,259		113	2,801
Windmills and complete parts thereof.....	"	519	27,556		708	36,171
Ore crushers and rock crushers, stamp mills, cornish and belted rolls, air compressors, cranes, derricks and percussion coal cutters.....	%		115,588			178,951
Portable machines:—	No.	415	5,023		203	2,302
Toddler or feed cutters.....	"	12	1,209		25	2,321
Horse-powers for farm purposes.....	"	330	583,598		700	1,033,868
Portable engines with boilers in combination and traction engines for farm purposes.....	"	38	38,241		21	23,352
Portable sawmills and planing mills.....	"	637	326,439		14	71,052
Steam shovels.....	"				649	386,583
Threshing machine separators.....	\$		36,653			266,427
" " parts of, including wind-stackers, hoppers, weighers, and self-feeders for same, and finished parts thereof for repairs, when imported separately.....	No.	1,056	163,597			96,254
Threshing machine outfits, when consisting of traction or portable engine and separator	"	13,317	251,071		16,065	263,198
All other portable machines, N. O. P., and parts.....	\$	533	16,547		784	96,745
Sewing machines.....	No.	4,420	283,350		7,058	22,569
" " parts of.....						546,068
Slot machines.....	"	15	59,474		109	241,445
Machines, typewriting.....	"					
" type-casting and type-setting, and parts thereof, adapted for use in printing offices.....	%					
Machines specially designed for ruling, folding, binding, embossing, creasing or cutting paper or cardboard, when for use exclusively by printers, bookbinders and by manu- facturers of articles made from paper or cardboard, including parts thereof, com- posed wholly or in part of iron, steel, brass or wood.....	\$		157,508		595	135,899
Machines for carding, spinning, weaving or knitting, imported by manufacturers for such purposes.....	%					707,949
Lithographic presses and type-making accessories for same.....	"					38,331
Printing presses.....	"					257,522
All machinery composed wholly or in part of iron or steel, N. O. P., and iron or steel castings, and iron or steel integral parts of all machinery specified in tariff item 453	"		5,028,003			8,005,310

Imports of Iron and Steel Goods subject to Duty

Material.	Nine months ending March, 1907.		Twelve months ending March, 1908.	
	Quantity.	Value.	Quantity.	Value.
Malleable iron castings.....	14,620	51,252	12,788	53,561
Nails and spikes, composition and sheathing nails.....	21,192	3,899	17,693	2,862
Nails and spikes, cut (ordinary builders).....	48,941	90,105	4,124	10,359
Railway spikes.....			29,850	59,665
Nail wire of all kinds, N.O.P.....	3,583	12,477	7,870	27,017
Nails and spikes, wrought and pressed, trunk, clout, coopers, cigar box, Hungarian, horse-shoe and other nails.....				
Mould boards, or shares or plough plates, land slides and other plates for agricultural implements, cut to shape from rolled plates of steel, but not moulded, punched, polished or otherwise manufactured.....	137,989	7,452		
Pulleys, belt for power transmission.....			(free list)	
Pumps, hand, N.O.P.....	36,180	100,070	14,566	80,299
Iron and steel railway bars or rails of any form, punched or not, N.O.P., for railways, ways and tramways, even although they are used for private purposes only, and even although they are not used or intended to be used in connexion with the business of common carrying of goods or passengers.....				
Railway fish-plates.....	72,811	1,867,865	49,187	1,278,084
Railway tie-plates.....	4,960	215,045	1,225	55,193
Rolled iron or steel angles, tees, beams, channels, girders and other rolled shapes or sections, not punched or drilled or further manufactured than rolled, N.O.P.....			859	40,016
Rolled iron or steel beams, channels, angles and other rolled shapes of iron and steel, not punched, drilled or further manufactured than rolled, weighing not less than 35 lbs. per lineal yard, not being square, flat, oval or round shapes, and not being railway bars or rails.....	953,024	1,298,390	650,869	1,064,890
Rolled iron or steel angles, beams, channels, building or structural rolled sections or shapes, not punched, drilled or further manufactured than rolled, N.O.P., and flat eye bar blanks not punched or drilled.....	458,975	704,889	1,474,074	2,202,516
Rolled iron or steel hoop, band, scroll or strip, 8" or less in width, No. 18 gauge and thicker, N.E.S.....	288,392	415,164		
Rolled iron or steel hoop, band, scroll or strip, 12" or less in width, No. 13 gauge and thicker, N.O.P.....	31,677	54,379		
Rolled iron or steel hoop, band, scroll or strip thinner than No. 18 gauge, N.E.S.....	28,740	51,790	52,735	99,977
	25,391	73,158		

Rolled iron or steel hoop, band, scroll or strip, No. 14 gauge and thinner, galvanized or coated with other metal or not, N.O.P.	28,776	62,670	105,568	285,670
Rolled iron or steel sheets or plates, sheared or unsheared, and skelp iron or steel, sheared or rolled grooves, N.O.P.	Cwt. 277,333 3,163	458,046 5,000	317,512	539,220
Rolled iron or steel plates not less than 48" wide and exceeding $\frac{1}{4}$ " in thickness	"	"	"	"
Rolled iron or steel plates not less than 30" in width and not less than $\frac{1}{4}$ " in thickness, N.O.P.	342,457 177,435	543,283 390,899	419,733	666,288
Rolled iron or steel sheets, No. 17 gauge and thinner, N.O.P.	83,316 12,536	138,429 32,293	250,839 1,998	581,624 6,930
Rolled iron or steel sheets and strips, polished or not, No. 14 gauge and thinner, N.O.P.	"	11,304	"	7,706
Rolls of chilled iron or steel	"	139,198	"	147,004
Sad or smoothing hatters and tailors' irons	"	"	"	"
Safes, doors for safes and vaults	"	"	"	"
Screws, iron and steel, commonly called 'wood screws', N.O.P., including lag or coach screws, plated or not, and machine or other screws, N.O.P.	Gross. 167,586	24,561	200,357	41,141
Seals, balances, weighing beams, and strength-testing machines of all kinds	Cwt. 106,128	"	"	195,464
Shafting, round, steel, in bars not exceeding 2 $\frac{1}{2}$ " diameter	"	"	"	89,428
Sheets, flat, of galvanized iron or steel	240,595	765,816	43,387	484,585
Sheets, iron or steel, corrugated, galvanized	2,813	8,982	133,069	9,436
Sheets, iron or steel, corrugated, not galvanized	965	1,910	522	2,084
Skates of all kinds, roller or other, and parts thereof	Pairs. 72,397	73,273	114,340	94,616
Skelp iron or steel, sheared or rolled in grooves, imported by manufacturers of wrought iron or steel pipe, for use exclusively in the manufacture of wrought iron or steel pipe in their own factories	Cwt. 609,532	965,335	704,709	1,201,942
Steel billets, N.O.P.	"	"	32,681	48,672
Stoves of all kinds, for coal, wood, oil, spirits or gas	"	"	"	469,881
Stove urns of metal, and dovetails, chaplets and hinge tubes of tin for use in the manufacture of stoves	"	"	"	"
Swedish rolled iron and Swedish rolled steel-nail rods under $\frac{3}{8}$ " diameter, for the manufacture of horseshoe nails	Cwt. 14,373 10,334	33,766 46,550	(Free list.) 28,692	142,781
Switches, frogs, crossings and intersections for railways	"	"	"	"
Tubing:—	"	"	"	"
Wrought or seamless tubing, iron or steel, plain or galvanized, threaded and coupled, or not, over 4" diameter, N.O.P.	"	88,733	"	371,795
Wrought or seamless tubing, iron or steel, plain or galvanized, threaded and coupled, or not, 4" and less in diameter, N.O.P.	Cwt. 680	102,858 3,045	5,331	321,982 29,942
Seamless steel tubing, valued at not less than $\frac{3}{4}$ cents per lb	"	3,764	"	7,884
Rolled or drawn square tubing of iron or steel, adapted for use in the manufacture of agricultural implements	"	"	"	"
Iron or steel pipe or tubing, plain or galvanized, riveted, corrugated or otherwise specially manufactured, including lockjoint pipe, N.O.P.	"	309,690	"	251,140
Boiler tubes of wrought iron or steel, including flues and corrugated tubes for marine boilers	"	11,560 7,952	"	"
Tubes, seamless steel for bicycles	"	"	"	"
Tubes of rolled steel, seamless, not joined or welded, not more than $\frac{1}{4}$ " diameter	"	"	"	"
Iron or steel pipe, not butt or lap welded, and wire bound wooden pipe, not less than 30" internal diameter, when for use exclusively in alluvial gold mining	"	"	"	130,265
Tubing, wrought iron or steel, plain or galvanized, threaded and coupled, or not, over $\frac{9}{16}$ " diameter, N.F.S.	"	204,334	"	"

IRON.—TABLE 19.—Continued.

Imports of Iron and Steel Goods subject to Duty

Material.	Nine months ending March, 1907.		Twelve months ending March, 1908.	
	Quantity.	Value.	Quantity.	Value.
Tubing, wrought iron or steel, plain or galvanized, threaded and coupled, or not, 2" or less in diameter.....				
Other iron or steel tubes or pipes.....		80,816		
Ware—Agate, granite, or enamelled iron or steel ware.....		61,766		
Ware—Galvanized sheet iron, or of galvanized sheet steel manufactures, N.O.P.....		124,343		
Ware—Iron or steel hollow ware, plain black or coated, N.O.P., and nickel and aluminium kitchen or household hollow ware.....		23,508		113,407
Wire bale ties.....		70,457		34,217
Wire bound wooden pipe, N.O.P.....	2,456	4,566	629	685
Wire cloth or woven wire and netting of iron or steel.....				29
Wire, crucible cast steel, valued at not less than 6 cents per lb.....	487,953	33,092	1,539,650	85,769
Wire screens, doors and windows.....	73,523	7,076	146,064	23,689
Wire buckthorn strip fencing, woven wire fencing, and wire fencing of iron and steel, N.O.P., not to include woven wire or netting made from wire smaller than No. 14 gauge, not to include fencing or wire larger than No. 9 gauge.....		8,513		7,377
Wire, iron or steel galvanized 9-12 and 13 gauge.....				
Wire, single or several, covered with cotton, linen, silk, rubber or other material, including cable so covered.....	637,805	23,609	1,969,592	57,924
Wire of iron and steel all kinds, N.O.P.....	447,496	458,082		
Wire rope, stranded or twisted wire clothes lines, picture or other twisted wire and cables, N.O.P.....	1,508,528	264,094	2,237,772	442,416
Iron or steel nuts, rivets or bolts with or without threads, nut bolt, and hinge blank, and T and strap hinges of all kinds, N.O.P.....	8,610,772	232,263	11,099,983	310,090
Iron or steel scrap, wrought, being waste or refuse, including punchings, cuttings, and clippings of iron or steel plates or sheets having been in actual use: crop ends of tin plate bars, blooms and rails, the same not having been in actual use.....	2,875,631	217,080	5,503,924	408,945
Iron or steel scrap, wrought, being waste or refuse, including punchings, cuttings, and clippings of iron or steel plates or sheets having been in actual use: crop ends of tin plate bars, blooms and rails, the same not having been in actual use.....	37,653	150,734	48,555	199,218
Knives, jack-knives, and pocket knives of all kinds.....	599,954	412,666	656,501	506,698
Knives and forks of steel, plated or not, N.O.P.....		72,541		131,537
All other cutlery, N.O.P.....		220,699		318,820
Guns, rifles including air guns and air rifles (not being toys), muskets, cannons, pistols, revolvers, or other fire arms.....		277,549		496,726
		571,286		630,449

Bayonets, swords, fencing foils, and masks.			1,038		4,583
Needles of any material or kind, N. O. P.			74,020		95,343
Steel, chrome steel.			15,826	4,871	21,785
Steel plate, universal mill or rolled edge plates of steel over 12" wide, imported by manufacturers of bridges or of structural work, or for use in car construction.	Cwt.	3,367			
Steel plate universal mill or rolled edge bridge plate imported by manufacturers of bridges.	Cwt.	46,730	74,789	269,118	415,686
Steel in bars or sheets to be used exclusively in the manufacture of shovels when imported by the manufacturers of shovels.		117,593	166,538		
Roller iron or steel, or cast steel in bars, bands, hoops, scroll or strip, sheet or plate of any size, thickness or width, galvanized or coated with any material or not, and steel blanks for the manufacture of milling cutters, when of greater value than 3½ cts. per lb.			294,521	74,796	494,585
Steel in bars, bands, hoops, scroll or strip, sheet or plates of any size, thickness or width, when of greater value than 2½ cts. per lb., N. O. P.		61,582			
Steel balls adapted for use in bearings of machinery and vehicles.		85,301	454,429		13,718
Steel wool.			5,054		1,584
Tools and implements—	Cwt.		341	387	
Adzes, cleavers, hatchets, wedges, sledges, hammers, crowbars, cant-dogs and track tools, picks, mattocks and eyes or poles for the same.					
Axes.	\$		61,132		76,797
Saws.	Doz.	3,114	18,064	5,730	35,383
Files and rasps, N. O. P.			166,292		181,750
Tools, hand or machine, of all kinds, N. O. P.			71,872		87,046
Knife blades or blanks, and table forks of iron and steel, in the rough, not handled, filed, ground or otherwise manufactured.			902,191		1,017,391
Manufactures, articles or wares of iron and steel, or, of which iron and steel (or either) are the component materials of chief value, N. O. P.			1,175		202
Totals.			3,018,633		3,980,631
			38,444,744		51,485,456

Machinery:—

Articles of metal as follows, when for use exclusively in mining and metallurgical operations viz., coal cutting machines, except percussion coal cutters; coal heading machines; coal augers; rotary coal drills; core drills; miners safety lamps and parts thereof, also accessories for cleaning, filling, and testing such lamps; electric or magnetic machines for separating or concentrating iron ores; furnaces for the smelting of copper, zinc and nickel ores; converting apparatus for metallurgical processes in metals; copper plates, plated or not; machinery for extraction of precious metals by the chlorination or cyanide process; amalgam safes; automatic ore samplers; automatic feeders; retorts; mercury pumps; pyrometers; bullion furnaces; amalgam cleaners; blast furnace blowing engines; wrought iron tubing, butt or lap welded, threaded or coupled, or not, over 4" diameter; and integral parts of all machinery mentioned in this item.	891,731	1,060,945
Blowers of iron or steel of a class or kind not made in Canada, for use in the smelting of ores, or in the reduction, separation or refining of metals; rotary kilns, revolving roasters and furnaces of metal of a class or kind not made in Canada, designed for roasting ore, mineral rock or clay; furnace slag trucks and slag pots of a class or kind not made in Canada.	124,552	47,687
Appliances of iron or steel, of a class or kind not made in Canada, and elevators and machinery of floating dredges, when for use exclusively in alluvial gold mining.	228,138	415,930
Well-drilling, and apparatus of a class or kind not made in Canada for drilling for water, natural gas or oil, and for prospecting for minerals, not to include motive power.	257,142	165,638
Briquette making machines.	90	10,130
News-paper printing presses, of not less value by retail than \$1,500 each, of a class or kind not made in Canada.	75	361,278
Machinery and tools not manufactured in Canada up to the required standard necessary for any factory to be established in Canada for the manufacture of rifles for the Government of Canada.	7,166	5,678
All materials, or parts in the rough, unfinished, and screws, nuts, bands and springs to be used in rifles to be manufactured at any such factory for the Government of Canada.	53,601	15,148
Machinery of every kind, and structural iron and steel for use in the construction and equipment of factories for the manufacture of sugar from beet root.	29,340	25,804
Mould boards or shares, or plough plates, land sides, and other plate for agricultural implements, when cut to shape from rolled plates of steel, but not moulded, punched, polished or otherwise manufactured.	30,768	207,966
Steel balls adapted for use on bearings on machinery, and vehicles.	1,988	4,409
Steel, rolled, for saws and straw cutters not tempered, or ground, nor further manufactured than cut to shape without indented edges.	13,723	158,379
Steel strips, and flat steel wire when imported into Canada by manufacturers of buckthorn and plain strip fencing, for use exclusively in their own factories in the manufacture thereof.	83	871
Steel wire, Bessemer soft drawn spring of Nos. 10, 12, and 13 gauge, respectively, and homo steel spring wire of Nos. 11 and 12 gauge, respectively, when imported by manufacturers of wire mattresses, to be used exclusively in their own factories in the manufacture of such articles.	11,849	24,202
Steel, crucible sheet, 11 to 16 gauge, 2 1/2" to 18" wide, for the manufacture of mower and reaper knives when imported by manufacturers thereof for use exclusively in the manufacture of such articles in their own factories.	7,873	49,779
	35,947	11,433

IRON.—TABLE 20—Continued.
Imports of Iron and Steel Goods free of Duty.

Material.	Nine months ending March, 1907.		Twelve months ending March, 1908.	
	Quantity.	Value.	Quantity.	Value.
Steel No. 20 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of corset steels, clock springs, and shoe shanks, imported by manufacturers of such articles for exclusive use in the manufacture of such articles in their own factories.....	253	823	208	1,228
Steel wire, flat, of 16 gauge or thinner, imported by the manufacturers of crinoline, and corset wires and dress stays, for use exclusively in the manufacture of such articles in their own factories.....	3,391	19,725	3,765	24,631
Steel, No. 12 gauge and thinner, but not thinner than No. 30 gauge, for the manufacture of buckle clasps, bed fasts, furniture casters, and ice-creepers, imported by the manufacturers of such articles, for use exclusively in the manufacture of such articles in their own factories.....	378	3,640	1,520	4,245
Steel No. 24 and 17 gauge, in sheets 63" long and from 18" to 32" wide, when imported by the manufacturers of tubular bow sockets for use exclusively in the manufacture of such articles in their own factories.....	1,508	3,477	2,327	5,832
Steel springs for the manufacture of surgical trusses, when imported by manufacturers of surgical trusses for use exclusively in the manufacture thereof in their own factories... Lbs.	1,454	976	969	706
Swedish rolled iron, and Swedish rolled steel nail rods, under half an inch in diameter, for the manufacture of horse shoe nails..... Cwt.	230	3,890	22,360	44,168
Steel seamless tubing valued at not less than 3½ cents per pound..... "			1,000	10,465
Steel or iron tubes, rolled, not joined or welded, not more than 1½ diameter, N.O.P..... "				10,423
Seamless steel, or wrought iron boiler tubes, including flues and corrugated tubes for marine boilers..... \$				655,203
Barbed fencing wire of iron or steel..... Cwt.	356,605	815,084	241,520	572,766
Wire, crucible cast steel, valued at not less than 6 cents per lb..... Lbs.	1,680,018	77,501	608,039	1,341,416
Wire, curved or not, galvanized iron or steel, Nos. 9, 12, and 13 gauge..... Cwt.	192,012	402,373		
Wire, steel, valued at not less than 2½ cents per lb. when imported by manufacturers of rope, for use exclusively in the manufacture of rope..... "			35,460	142,467
Totals.....		4,777,882		10,384,242

LEAD.

The production of lead in Canada in 1907 and 1908 was obtained entirely from the Province of British Columbia, and the following statistics given are those collected and published by the Provincial Mineralogist for that Province. The quantities represent the metal contained in ore shipped to mills and smelters as determined by smelter and mill returns, and are somewhat in excess of the actual amount of lead recovered, which would represent the quantity available for consumption.

The production of lead in ore in 1907 was 47,738,703 pounds, as compared with 54,608,217 pounds in 1906; a decrease of 6,869,514 pounds, or 12·6 per cent. In 1908 the production suffered a further falling off to 43,195,733 pounds, or a decrease of 4,542,970 pounds, or 9·5 per cent as compared with 1907.

Statistics showing the lead content of ores shipped since 1887 are given in Table 1 following:—

LEAD.—TABLE 1.
Annual Production.

Calendar Year.	Lbs.	Price per Lb.	Value.
		Cts.	\$
1887.....	204,800	4·500	9,216
1888.....	674,500	4·420	29,812
1889.....	165,100	3·930	6,488
1890.....	105,000	4·480	4,704
1891.....	88,665	4·350	3,857
1892.....	808,420	4·090	33,064
1893.....	2,135,023	3·730	79,636
1894.....	5,703,222	3·290	187,636
1895.....	16,461,794	3·230	531,716
1896.....	24,199,977	2·980	721,159
1897.....	39,018,219	3·580	1,396,853
1898.....	31,915,319	3·780	1,206,399
1899.....	21,862,436	4·470	977,250
1900.....	63,169,821	4·370	2,760,521
1901.....	51,900,958	4·334	2,249,387
1902.....	22,956,381	4·069	934,095
1903.....	18,139,283	4·237	768,562
1904.....	37,531,244	4·309	1,617,221
1905.....	56,864,915	4·707	2,676,632
1906.....	54,608,217	5·657	3,089,187
1907.....	47,738,703	5·325	2,542,086
1908.....	43,195,733	4·200	1,814,221

A large portion of the lead ore mined in Canada is now treated and refined in Canadian smelters and refineries, the balance being exported to the United States and Europe for refining.

Returns of smelter production have been received by this Branch for 1908, and show the total quantity of lead contained in base bullion, or recovered as refined, to have been 37,666,066 pounds.

The quantity of lead contained in ore and concentrates and base bullion exported was, according to the Customs returns, 4,511,931 pounds. Deducting from this the quantity of lead contained in base bullion exported, and allowing for a loss of 5 per cent in smelting the ore and concentrates exported, we estimate the total quantity of lead obtained from Canadian ores shipped in 1908 and available for consumption as about 40,891,448 pounds.

Lead smelters were in operation at Marysville in East Kootenay, owned by the Sullivan Group Mining Co., and at Trail, West Kootenay, operated by the Consolidated Mining & Smelting Company of Canada.

Previous to 1904 lead ores mined in Canada were either exported or were reduced in Canadian furnaces to lead bullion carrying gold, silver, etc., which product was then exported for refining.

A lead refinery, however, is now being operated at Trail, B.C., in connexion with the smelter there (the electric process being employed) and pig lead and lead pipe of exceptional purity are being produced. The refinery also produces fine gold, fine silver, refined antimony, and copper sulphate.

The production of refined lead, including pig lead and lead pipe, etc., has been as follows :—

	Refined lead produced.
1904	7,519,440
1905	15,804,509
1906	20,471,314
1907	26,607,461
1908	36,549,274

The refined lead finds a market in Canada, the United States, and the Orient, about 38 per cent of the production in 1908 being exported chiefly to China and Japan.

The Carter White Lead Co. of Canada, Ltd., manufacturers of white lead at Montreal, use Trail lead exclusively. Their plant is equipped to use about 7,000 tons per annum.

Prices.—The average monthly price of lead on the New York market during 1907 was 5·325 cents per pound, as compared with 5·657 cents in 1906, a decrease of 5·9 per cent. In 1908 the average price was 4·200 cents, a decrease of 1·125 cents or 21·1 per cent, as compared with 1907.

Following is a statement of the average monthly prices of lead in New York during 1906, 1907, and 1908, as published by the Engineering and Mining Journal.

Monthly Average Prices of Lead in New York.

Month.	Cents per Lb.			Month.	Cents per Lb.		
	1906.	1907.	1908.		1906.	1907.	1908.
January.....	5·600	6·000	3·691	July.....	5·750	5·288	4·447
February..	5·464	6·000	3·725	August.....	5·750	5·250	4·580
March.....	5·350	6·000	3·838	September.....	5·750	4·813	4·515
April.....	5·404	6·000	3·993	October.....	5·750	4·750	4·351
May.....	5·685	6·000	4·253	November...	5·750	4·376	4·330
June.....	5·750	5·760	4·466	December...	5·900	3·658	4·213
Average for the year.....					5·657	5·325	4·200

The average monthly prices of soft lead in London, England, as published by Julius Matton of London, and Metallgesellschaft of Frankfort-on-the-Main, were, from 1901 to 1908, as follows :—

Average Monthly Prices of Lead in London.

£ per long ton.

Month.	1901.			1902.			1903.			1904.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
January.....	15	18	6	10	11	4	11	6	1	11	11	2
February..	14	13	4	11	12	4	11	14	2	11	11	10
March.....	13	7	7	11	10	2	13	4	6	12	—	9
April.....	12	8	5	11	11	11	12	8	1	12	5	1
May.....	12	5	6	11	12	—	11	16	—	11	15	11
June.....	12	6	10	11	5	5	11	8	9	11	10	5
July.....	12	3	—	11	4	8	11	7	8	11	13	4
August.....	11	13	10	11	2	5	11	2	11	11	14	9
September.....	11	19	1	10	17	10	11	3	4	11	15	9
October.....	11	12	—	10	14	11	11	2	2	12	3	9
November.....	11	5	4	10	14	4	11	2	2	12	17	10
December.....	10	10	8	10	15	1	11	3	7	12	15	6
Yearly average.....	12	10	5	11	5	3	11	11	7	11	19	8

Month.	1905.			1906.			1907.			1908.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
January.....	12	17	6	16	17	6	19	16	8	14	10	6
February.....	12	9	3	16	0	4	19	11	6	14	5	6
March.....	12	5	11	15	17	9	19	14	7	14	1	4
April.....	12	13	2	15	16	6	19	16	4	13	13	10
May.....	12	15	3	16	13	6	19	17	7	13	2	7
June.....	13	—	—	16	15	6	20	6	—	12	15	7
July.....	13	12	2	16	11	7	20	8	2	12	19	6
August.....	13	19	2	17	1	3	19	5	3	13	9	10½
September.....	13	19	—	18	4	4	19	17	6	13	3	6
October.....	14	13	7	19	7	9	18	13	—	13	7	3
November.....	15	6	9	19	5	6	17	4	11	13	12	2
December.....	17	1	—	19	12	6	14	9	4	13	3	6
Yearly average.....	13	14	5	17	7	—	19	1	10	13	10	5

Bounties.—In 1901, and again in 1903, the Dominion Government, to encourage the lead industry, authorized the payment of a bounty on the production of lead. The act of 1903 provided for the payment under certain restrictions of 75 cents per hundred pounds on lead contained in ore mined and smelted in Canada, provided that when the standard price of pig lead in London, England, exceeded £12 10s. per ton of 2,240 pounds, such bounty should be reduced proportionately by the amount of such excess. Thus, when the price of lead in London rose to £16 or over per long ton, the bounty ceased. As the price of lead exceeded £16 sterling on the London market for a considerable period during 1906 and 1907 the bounty paid during those years was comparatively small.

The act of 1903 provided that payment of bounty should cease on June 30, 1908, and as only a portion of the funds provided had been used, a new act was passed in the latter year providing for further bounty payments at the rate of 75 cents per hundred pounds, or approximately £3 10s. per ton of 2,240 lbs., subject to the restriction that when the price of lead in London exceeds £14 10s. the bounty shall be reduced by such excess.

The act, together with the regulation based upon it, is reproduced herewith in full.

‘ACT 7-8 EDWARD VII, CHAPTER 43.

AN ACT RESPECTING THE PAYMENT OF BOUNTIES ON LEAD CONTAINED IN LEAD-BEARING ORES MINED IN CANADA.

Assented to July 20th, 1908.

Whereas under the provisions of an Act passed on the 24th day of October, 1903, being chapter 31 of the Acts of 1903, payment of a bounty on lead contained in lead-bearing ores mined in Canada, not to exceed five hundred thousand dollars in any fiscal year, was authorized to be paid until the thirtieth day of June, 1908 ;

and whereas the total amount of bounty paid thereunder up to the thirty-first day of March, 1908, was six hundred and sixty-seven thousand four hundred and four dollars, and it is estimated that a further amount of forty-five thousand dollars will be payable on or before the thirtieth day of June, 1908, leaving unexpended about one million seven hundred and eighty-eight thousand and seventy-eight dollars of the total amount authorized to be paid under the provisions of the said chapter 31: Therefore His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. The Governor in Council may authorize the payment of a bounty of seventy-five cents per one hundred pounds on lead contained in lead-bearing ores mined in Canada, on and after the first day of July, 1908, such bounty to be paid to the producer or vendor of such ores; Provided that the sum to be paid as such bounty shall not exceed five hundred thousand dollars in any year ending on the thirtieth day of June: Provided also that when it appears to the satisfaction of the Minister charged with the administration of this Act that the standard price of pig lead in London, England, exceeds fourteen pounds ten shillings sterling per ton of two thousand two hundred and forty pounds, such bounty shall be reduced by the amount of such excess.

2. The total amount of bounty payable under the provisions of chapter 31 of the Acts of 1903, and of this Act, shall not exceed two million five hundred thousand dollars.

Payment of the said bounty may be made from time to time to the extent of sixty per cent upon smelter returns showing that the ore has been delivered for smelting at a smelter in Canada. The remaining forty per cent may be paid at the close of the fiscal year, upon evidence that all such ore has been smelted in Canada.

2. If at the close of any year it appears that during the year the quantity of lead produced, on which the bounty is authorized, exceeds thirty-three thousand three hundred and thirty-three tons of two thousand pounds, the rate of bounty shall be reduced to such sum as will bring the payments for the year within the limit mentioned in section 1.

3. If at any time it appears to the satisfaction of the Governor in Council that the charges for transportation and treatment of lead ores in Canada are excessive, or that there is any discrimination which prevents the smelting of such ores in Canada on fair and reasonable terms, the Governor in Council may authorize the payment of bounty at such reduced rates as he deems just, on the lead contained in such ores mined in Canada and exported for treatment abroad.

4. If at any time it appears to the satisfaction of the Governor in Council that products of lead are manufactured in Canada direct from lead ores mined in Canada without the intervention of the smelting process, the Governor in Council may make such provision as he deems equitable to extend the benefits of this Act to the producers of such ores.

5. The bounties payable under the provisions of this Act shall cease and determine on the thirtieth day of June, one thousand nine hundred and thirteen.

6. The Governor in Council may make regulations for carrying out the intention of this Act.

REGULATIONS under the provisions of the Act 7-8, Edward VII, Chapter 43 intituled "An Act to provide for the payment of Bounty on Lead contained in the lead-bearing ores mined in Canada."

(As authorized by Order in Council on the 3rd August, 1908.)

1. The Minister of Trade and Commerce is charged with the administration of this Act.
2. All producers or vendors of lead-bearing ores who desire to avail themselves of the provisions of the Act above quoted, and to be paid bounty, shall, before making claim for such bounty, notify the Minister of their intention to claim under the provisions of the Act, and shall declare the name of the mine producing such ore, its situation, the names of the President, Secretary, and Manager, as well as the name of the official authorized to make claim. Notice shall be given the Minister of changes in ownership and management. Where the bounty is claimed by Lessees, the consent of the owner shall be shown.
3. All claims for the payment of bounty shall be made and substantiated under the oath of the Manager of the mine, or of the official authorized to make the claim.
4. Claims may be made monthly, that is immediately after the close of each calendar month, and be in such form, and contain such evidence, as may seem to the Minister from time to time necessary.
5. No claims made otherwise than in conformity with these regulations, and in form required by the Minister, shall be recognized, allowed or paid by the Minister.
6. The smelting of all such ores shall at all times be under the supervision of the officer of the Department of Trade and Commerce, appointed or detailed for the purpose.
7. The supervising officer may at any time demand and receive a portion of the floor sample of any ore delivered at the smelter for smelting purposes.
8. The rate of bounty shall be computed according to the London quotation upon the day the ore is taken into stock at the smelter, such day not to be later than the last day of the calendar month during which the ore was unloaded from cars at the smelter grounds.
9. The lead contents of ores shall for the purpose of this Act be ascertained by fire assay, as used in ordinary commercial assaying.
10. The books of the claimants, and those of the smelting works at which the ore is smelted, shall be at all times open to the inspection of such supervising officer, and of any officer of the Department of Trade and Commerce who may be detailed by the Minister for the purpose.
11. All claims shall be substantiated by the oath of the Manager of the Smelting Works at which the ores are smelted, and shall be verified and certified

to by the officer of the Department of Trade and Commerce, appointed to supervise the smelting at the works where it has been carried on.

12. The cost of the supervision shall be paid by the claimants and may be deducted *pro rata* according to the quantity smelted during the fiscal year from the amount payable to such claimants at the close of each fiscal year.'

Statement of Bounties paid on Lead during the fiscal years 1899 to 1909.

Year ending.	Bounty paid.	Year ending.	Bounty paid.
June 30, 1899.	\$ 76,665	June 30, 1906.....	\$ 90,196
" 30, 1900.	43,335	March 31, 1907, (9 months).....	1,995
" 30, 1901.	30,000	" 31, 1908	51,001
" 30, 1902.		" 31, 1909	307,433
" 30, 1903.	4,380		
" 30, 1904.	195,627	Total	1,131,277
" 30, 1905.	330,645		

Exports and Imports : According to Trade and Navigation reports the total quantity of lead contained in ore, or concentrates, or pig lead, exported during the calendar year 1908, was 18,454,594 pounds valued at \$622,454, as compared with 25,591,883 pounds valued at \$1,029,898 in 1907.

Details of exports in 1907 and 1908 are as follows :—

Exports of Lead 1907 and 1908.

	Lead in Ore, Concentrates, etc.		Pig Lead.	
	Lbs.	Value.	Lbs.	Value.
1907				
To United States	13,817,389	\$532,235	4,590	\$ 230
To Other Countries	8,160,788	333,706	3,609,116	163,727
Totals.....	21,978,177	865,941	3,613,706	163,957
1908				
To United States.....	719,086	20,514	168,866	5,329
To Other Countries.....	3,792,845	132,880	13,773,797	463,731
Totals.....	4,511,931	153,394	13,942,663	469,060

The exports of lead since 1873 are shown in Table 2.

LEAD.—TABLE 2.

Exports of Lead.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value.
1873.....		\$1,993	1891.....		\$5,000
1874.....		127	1892.....		2,509
1875.....		7,510	1893.....		3,099
1876.....		66	1894.....	5,792,700	144,509
1877.....		720	1895.....	23,075,892	435,071
1878.....			1896.....	26,480,320	462,095
1879.....		230	1897.....	43,802,697	925,144
1880.....			1898.....	37,375,678	885,485
1881.....			1899.....	15,799,518	466,950
1882.....		32	1900.....	57,642,029	1,917,690
1883.....		5	1901.....	45,590,995	1,804,687
1884.....		36	1902.....	17,761,484	457,170
1885.....			1903.....	18,624,303	426,466
1886.....			1904.....	25,868,823	559,461
1887.....		724	1905.....	41,657,403	1,046,541
1888.....		18	1906.....	21,436,022	736,007
1889.....		18	1907.....	25,591,883	1,029,898
1890.....			1908.....	18,454,594	622,454

Statistics of the annual imports since 1880 of lead and manufactures of lead are shown in Tables 3 and 4 ; imports of litharge in Table 5 ; and imports of dry white and red lead in Table 6.

The principal imports during the fiscal years 1907 and 1908 were as follows :—

	1907 (9 months).		1908 (12 months).	
	Tons.	Value.	Tons.	Value.
Old, scrap, pig and block.....	3,979	\$277,470	3,196	\$284,604
Bars and sheets.....	686	56,630	862	75,186
Pipe.....	37	3,923	125	11,783
Shot and bullets.....	44	3,859	11	1,221
Manufactures of lead.....		74,911		112,287
Tea lead.....	823	79,732	1,081	118,635
Litharge.....	566	49,183	952	90,785
Total.....	6,135	545,708	6,227	694,501
Metallic lead contained in imported lead pigments.....	2,380		4,165	
	8,515		10,392	

The production of refined lead, as already shown, was in 1908, 18,274 tons ; while the exports of pig lead were 6,971 tons, leaving 11,303 tons as the consumption of Canadian lead. The imports of lead during the fiscal year 1908 are shown

above to have been 10,392 tons, not including certain manufactures of lead valued at \$112,287, so that the total consumption of lead in 1908 probably exceeded 22,000 tons.

LEAD.—TABLE 3.

Imports of Lead.

Fiscal Year.	OLD, SCRAP, AND PIG.		BARS, BLOCKS, SHEETS.		TOTAL.	
	Cwt.	Value.	Cwt.	Value.	Cwt.	Value.
1880					30,298	\$124,117
1881	16,236	\$ 56,919	18,222	\$70,744	34,458	127,663
1882	36,655	120,870	10,540	35,728	47,195	156,598
1883	48,780	148,759	8,591	28,785	57,371	177,544
1884	39,409	103,413	9,704	28,458	49,113	131,871
1885	36,106	87,038	9,362	24,396	45,468	111,434
1886	39,945	110,947	9,793	28,948	49,738	139,895
1887	61,160	173,477	14,153	41,746	75,313	215,223
1888	68,678	196,845	14,957	45,900	83,635	242,745
1889	74,223	213,132	14,173	43,482	88,396	256,614
1890	101,197	283,096	19,083	59,484	120,280	342,580
1891	86,382	243,033	15,646	48,220	102,028	291,253
1892	97,375	254,384	11,299	32,368	108,674	286,752
1893	94,485	215,521	12,403	32,286	106,888	247,807
1894	70,223	149,440	8,486	20,451	78,709	169,891
1895	67,261	139,290	6,739	16,315	74,000	155,605
1896	72,433	173,162	8,575	23,169	81,008	196,331
1897	65,279	158,381	10,516	29,175	75,795	187,556

	OLD, SCRAP, PIG, AND BLOCK.*		BARS AND SHEETS.†		TOTAL.	
1898	88,420	\$260,779	22,214	\$39,041	110,634	\$ 299,820
1899	114,659	283,432	44,796	39,833	159,455	323,265
1900	62,361	207,819	15,493	53,506	77,854	251,325
1901	(a) 85,321	97,011	16,295	78,316	101,616	175,327
1902	(a) 122,279	104,672	18,596	49,261	140,875	153,933
1903	(a) 98,530	67,821	11,535	35,398	110,063	103,219
1904	(a) 94,602	121,165	14,102	39,644	108,704	160,809
1905	(a) 57,074	133,775	17,792	51,972	74,866	185,747
1906	82,729	271,105	16,106	57,155	98,835	328,290
1907	79,575	277,470	13,710	56,630	93,285	334,100
1908	63,921	284,604	17,253	75,186	81,174	359,790

* Duty 15 per cent.

† Duty 25 per cent.

(a) Includes Canadian lead ore sent to the United States for refining, imported at price of refining only.

LEAD.—TABLE 4.

Imports of Lead Manufactures.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$ 15,400	1890.....	\$ 25,600	1900.....	\$ 194,736
1881.....	22,629	1891.....	23,893	1901.....	107,260
1882.....	17,282	1892.....	22,636	1902.....	120,020
1883.....	25,556	1893.....	33,783	1903.....	134,151
1884.....	31,361	1894.....	29,361	1904.....	129,093
1885.....	36,340	1895.....	38,015	1905.....	147,177
1886.....	33,078	1896.....	50,722	1906.....	163,793
1887.....	19,140	1897.....	60,735	1907.....	162,425
1888.....	18,816	1898.....	63,179	1908.....	243,926
1889.....	16,315	1899.....	91,497		

LEAD.—TABLE 5.

Imports of Litharge.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	3,041	\$14,334	1895.....	11,955	\$32,953
1881.....	6,126	22,129	1896.....	10,710	32,817
1882.....	4,900	16,651	1897.....	12,028	34,538
1883.....	1,532	6,173	1898.....	11,446	32,904
1884.....	5,235	18,132	1899.....	9,530	32,518
1885.....	4,990	16,156	1900.....	9,139	29,176
1886.....	4,928	16,003	1901.....	11,132	51,944
1887.....	6,397	21,865	1902.....	13,002	47,021
1888.....	7,010	23,808	1903.....	13,921	47,761
1889.....	8,089	31,082	1904.....	9,894	32,633
1890.....	9,453	31,401	1905.....	17,865	57,736
1891.....	7,979	27,613	1906.....	10,165	39,836
1892.....	10,384	34,343	1907.....	11,311	49,183
1893.....	7,685	24,401	1908..Duty free.....	19,052	90,785
1894.....	38,547	28,685			

The imports of white and red lead and orange mineral in 1908 amounted to 7,830,860 pounds valued at \$420,537. In 1903 the imports were 19,208,786 pounds, the falling off being due to the establishment of lead-corroding works at Montreal. Detailed statistics of imports of lead pigments in 1907 and 1908 are as follows, the statistics of imports since 1885 being shown in Table 6.

Imports of White and Red Lead in 1907 and 1908.

	1907 (9 months).		1908 (12 months).	
	Lbs.	Value.	Lbs.	Value.
Lead, white dry.....	4,856,850	\$ 234,127	6,115,739	\$ 328,768
Lead, white ground in oil.....	222,110	11,596	513,179	28,443
Lead, red, dry and orange mineral.....	877,666	44,906	1,201,942	63,326
	5,956,626	290,629	7,830,860	420,537

LEAD.—TABLE 6.

Imports of Dry White and Red Lead and Orange Mineral, and White Lead ground in Oil.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
1885.....	5,404,753	\$ 198,913	1897.....	10,310,463	\$ 347,539
1886.....	6,703,077	213,258	1898.....	12,682,808	448,659
1887.....	6,998,820	233,725	1899.....	14,507,945	514,842
1888.....	6,361,334	216,654	1900.....	14,679,920	634,492
1889.....	7,066,465	267,236	1901.....	10,241,601	461,368
1890.....	10,859,672	381,959	1902.....	15,584,164	603,582
1891.....	8,560,615	337,407	1903.....	19,208,786	758,371
1892.....	10,288,766	351,686	1904.....	16,925,585	662,098
1893.....	10,865,183	364,680	1905.....	17,376,588	638,381
1894.....	10,958,170	353,053	1906.....	10,412,891	417,444
1895.....	8,780,052	282,353	1907.....	5,956,626	290,629
1896.....	11,711,496	367,569	1908.....	7,830,860	420,537

Ontario.

There was no production of lead reported from Ontario in 1907 or 1908. The property of the Stanley Smelting Works was taken over by the Canadian Lead Mining & Smelting Company, Ltd., with head office at Kingston, Ont., and mines at Perth Road. This Company proposes to erect a custom smelter at Kingston Harbour for the treatment of lead and silver ores.

British Columbia.

As already stated the total lead production in Canada in 1907 and 1908 was derived from this Province. In other years, however, there has been a small production from other provinces, and the following table is given to show the production of this Province separately, the statistics of quantity being those published by the Provincial Mineralogist of British Columbia.

LEAD.—TABLE 7.

British Columbia :—Production.

Calendar Year.	Lbs.	Value.	Price per Pound.	Calendar Year.	Lbs.	Value.	Price per Pound.
			Cts.				Cts.
1887....	204,800	\$ 9,216	4'50	1898 ...	31,693,559	1,198,017	3'780
1888....	674,500	29,813	4'42	1899....	21,862,436	977,250	4'470
1889....	165,100	6,488	3'93	1900....	63,158,621	2,760,031	4'370
1890....	Nil.			1901....	51,582,906	2,235,603	4'334
1891....	"			1902....	22,536,381	917,005	4'069
1892....	808,420	33,064	4'09	1903....	18,089,283	766,443	4'237
1893....	2,131,092	79,490	3'73	1904....	36,646,244	1,579,086	4'309
1894....	5,703,222	187,636	3'29	1905....	56,580,703	2,663,254	4'707
1895....	16,461,794	531,716	3'23	1906....	52,408,217	2,964,733	5'657
1896....	24,199,977	721,159	2'98	1907....	47,738,703	2,542,086	5'325
1897....	38,841,135	1,390,513	3'58	1908....	43,195,733	1,814,221	4'200

LEAD.—TABLE 8.

British Columbia :—Production by Districts.

	1905.	1906.	1907.	1908.
	Lbs.	Lbs.	Lbs.	Lbs.
Cassiar.....	5,500			
East Kootenay—				
Fort Steele.....	48,248,828	44,487,481	37,526,194	30,204,788
Other Districts.....	149,584	167,691	73,842	358,270
West Kootenay—				
Ainsworth.....	1,002,114	3,173,353	3,654,775	4,790,216
Nelson.....	1,368,388	1,034,553	1,582,113	345,424
Slocan.....	5,399,330	2,975,674	4,305,826	6,572,268
Other Districts.....	339,883	469,000	570,534	903,552
Yale.....	67,076	100,465	25,419	21,215
	56,580,703	52,408,217	47,738,703	43,195,733

From the last table it will be seen that 70·6 per cent of the production in 1908 was derived from East Kootenay, 10·1 per cent from Ainsworth, 0·79 per cent from Nelson, and 15·2 per cent from the Slocan districts of West Kootenay.

The most important producing silver lead mine in Canada is undoubtedly the St. Eugene situated at Moyie on Moyie lake, and owned and operated by the Consolidated Mining and Smelting Company of Canada. According to the annual report of the Company the ore mined during the twelve months ending June 30, 1908, was 155,419 tons producing 24,523 tons of concentrates, the ratio of concentrates being 6·3 to 1. The concentrates contained 595,909 ounces of silver and 28,054,312 pounds of lead, or an average of 24·3 ounces of silver per ton and 57·2 per cent lead. The concentrates are shipped to the Trail smelter for treatment and refining. The managing director in the annual report makes the following statement respecting the development of the mine:—

"The probable ore reserves of the St. Eugene group, Moyie, are nearly 50 per cent greater than a year ago. Ore 50 per cent better in grade than last year's average has been found between the 600 ft and 800 ft levels, on the main vein above the 1,500 ft level, and between the 1,900 ft and 2,000 ft levels. Between the 1,700 ft and 1,800 ft levels, a new avenue, called No. 2 $\frac{1}{2}$, has been located, and this avenue has also been found and partly developed upon the 1,900 ft level. Another new avenue, (which will be designated as Fifth Avenue) located approximately 120 feet farther in the hill than Fourth Avenue, is being developed on the 1,900 ft and 2,000 ft levels.

"In the report of last year, it was mentioned that the 2,000 ft level did not promise to yield as much tonnage as the 1,900 ft level; but present indications are that the 2,000 ft level will produce more ore than the 1,900 ft level, or any other level in the mine. The grade of the ore is, however, lower than that produced from the upper workings. Some bodies of low grade material have been found on the 2,100 ft level, and a raise from this level shows ore of workable grade. Prospecting upon this level is still incomplete. Drifting and cross-cutting upon the 2,200 ft level are progressing, and one or two low grade ore bodies have been found. It will require six months or a year to determine the amount of ore upon this level.

"The main St. Eugene shaft is 24 feet below the 2,400 ft level, or 749 feet vertically below the collar of the shaft."

The other important shipping lead mines of the Fort Steele division were the North Star and the Sullivan, which together shipped about 10,000 tons of ore.

The Mining Recorder for the Slocan division reported to the Provincial Mineralogist that "There was, approximately, 8,600 tons of silver-lead ore shipped from the division during the year just closed, averaging in values, 100 ounces in silver and 30 per cent lead; there are 14 mines in this district which ship in car-load lots, and 10 in smaller lots, of from one to ten tons."

The mines in this division shipping over 1,000 tons were the Vancouver, Standard, Rambler-Cariboo, and Richmond Eureka.

According to similar authority the most notable work done in the Ainsworth Mining division in 1908 was at the old Bluebell mine on Kootenay lake, and at the Amalgamated Whitewater and Whitewater Deep mines on Kaslo creek.

"The Bluebell, situated on the east side of Kootenay lake (Riondel P. O.), is owned by the Canadian Metal Co., and controlled in France. Little underground work was done during the first half of the year, pending the completion of the concentration plant. No development was carried on, there having been made previously available for milling some 300,000 tons of ore. About June 1, the lead concentrator was ready for work, and, from that time to the end of the year, about 19,000 tons were milled. During September and the greater part of October operations were suspended, while a new conveyer system was being installed. Except for this interruption, operations were continuous, and about 55 men, all told, have been regularly employed. The conditions under which work is carried on at this property are exceptionally favourable to low costs, and the ex-

perience of the past six months has shown that, under these conditions, a profit can be earned from lead alone. The magnetic separation of the iron and zinc sulphides is about to be undertaken, and it is hoped that, early in 1909, the experiments in this direction will have resulted in a manner favourable to the earning of further profit, so important to the encouragement of the necessarily large capital involved. The ore of this mine consists of about one-third lead and zinc sulphides, one-third pyrrhotite and other iron sulphides, and one-third quartz and limestone, the whole, carrying about two and a half ounces of silver to the ton, chiefly associated with the lead."

Report of the Minister of Mines for British Columbia, 1908, p. 92.

NICKEL.

The production of nickel from the ores of the Sudbury district in Ontario, which more than doubled between 1904 and 1906, has shown a slight falling off during 1907 and 1908. The year 1906 was a year of maximum production, the quantity of nickel contained in matte shipped being 21,490,955 pounds. In 1907 the quantity of nickel contained in matte shipped was 21,189,793 pounds, a decrease as compared with 1906 of 301,162 pounds, or 1·4 per cent; while in 1908 a further falling off of 2,046,682 pounds or 9·7 per cent is shown, the production for the last year being 19,143,111 pounds.

The ore, which is generally described as a nickeliferous pyrrhotite with chalcopryite, is first roasted and then smelted and converted at Copper Cliff and Victoria mines to a high grade matte, carrying from 77 to 82 per cent of the combined metals nickel and copper, which is shipped to the United States and Great Britain for refining.

The quantity of matte shipped in 1907 was 22,025 tons averaging 48 per cent nickel and 32 per cent copper, while the shipments of matte in 1908 were 21,210 tons averaging 45·1 per cent nickel and 35·3 per cent copper.

The following were the aggregate results of the operations on the nickel-copper deposits of Ontario in 1906, 1907, and 1908 :—

	1906. Tons of 2,000 lbs.	1907. Tons of 2,000 lbs.	1908. Tons of 2,000 lbs.
Ore mined.....	343,814	351,916	409,551
Ore smelted.....	340,059	359,076	360,180
Bessemer matte produced.....	20,364	22,041	21,197
" " shipped.....	20,310	22,025	21,210
Copper contents of matte shipped.....	5,265	6,996	7,503
Nickel " ".....	10,745	10,595	9,572
Spot value of matte shipped.....	\$4,628,011	\$3,289,382	\$2,930,989
Wages paid.....	1,117,420	1,278,694	1,286,265
Men employed.....	1,417	1,660	1,690

According to Customs returns exports of nickel in matte, etc., were for twelve months ending December 31, as follows :—

	1906. Lbs.	1907. Lbs.	1908. Lbs.
To Great Britain.....	2,716,892	2,518,338	2,554,486
To United States.....	17,936,953	16,857,997	16,865,407
	20,653,845	19,376,335	19,419,893

The above figures of production do not include the nickel contents of the silver-cobalt ores from the Cobalt district, of which it is difficult to obtain satisfactory returns. The shippers of silver-cobalt ores receive little or no return for the nickel contents, although this metal forms an important constituent of the ore, and is possibly to some extent saved by the refiners.

During 1908 the price of refined nickel in New York was quoted during the first nine months at from 45 to 50 cents per pound, and during the balance of the year at from 40 to 45 cents according to size and terms of order.

In 1907 the price remained fairly steady throughout the year, the weekly statement¹ being "for large lots: New York, the chief producer, quotes 45 to 50 cents per pound according to size and terms of order. For small quantities 50 to 65 cents same delivery."

Statistics of the production of nickel are shown in the following table, the quantity representing the metal contained in the matte shipped, and the value being based on the final value of the metal in a refined state.

For statistics of the quantities of ore treated, the matte produced, etc., reference may be made to a previous chapter on metallurgical production.

NICKEL.—TABLE 1.

Annual Production.

Calendar Year.	Pounds of Nickel in Matte Shipped.	Average Price per lb. at New York	Value.	Calendar Year.	Pounds of Nickel in Matte Shipped.	Average Price per lb. at New York	Value.
			\$				\$
1889.....	*830,477	60c.	498,286	1899.....	5,744,000	36c.	2,067,840
1890.....	1,435,742	65c.	933,232	1900.....	7,080,227	47c.	3,327,707
1891.....	4,035,347	60c.	2,421,208	1901.....	9,189,047	50c.	4,594,523
1892.....	2,413,717	58c.	1,399,956	1902.....	10,693,410	47c.	5,025,903
1893.....	3,982,982	52c.	2,071,151	1903.....	12,505,510	40c.	5,002,204
1894.....	4,907,430	38½c.	1,870,958	1904.....	10,547,883	40c.	4,219,153
1895.....	3,888,525	35c.	1,360,984	1905.....	18,876,315	40c.	7,550,526
1896.....	3,397,113	35c.	1,188,990	1906.....	21,490,955	41.64	8,948,834
1897.....	3,997,647	35c.	1,399,176	1907.....	21,189,793	45c.	9,535,407
1898.....	5,517,690	33c.	1,820,838	1908.....	19,143,111	43c.	8,231,538

*Calculated from shipments made by rail.

The companies engaged in mining and smelting nickel ores are:—

The Canadian Copper Co., (The International Nickel Company) of Copper Cliff, Ont., and New York.

The Mond Nickel Company, Victoria Mines, Ont., and London, Eng.

The Lake Superior Power Co., (The Lake Superior Corporation), Sault Ste. Marie, Ont., is also an owner of important mines which, however, have not been operated during several years past.

¹ Engineering and Mining Journal, New York.

Although nickel is one of the minor constituents of the rich silver ores of the Cobalt district, statistics of the quantities of this mineral contained in these ores have not been included in the accompanying statistics of production.

The Ontario Bureau of Mines, however, reports the quantity of nickel contained in ore shipped from Cobalt as follows:—

Year.	Tons of nickel.
1904	14
1905	75
1906	160
1907	370
1908	612

An interesting development of the metallurgical industry in Canada has been the production of nickel oxide. A small quantity was made during 1908 at the Metallurgical Works of the Coniagas Reduction Company at Thorold, Ont., from ores from the Coniagas mine at Cobalt. Other products from the same ore being refined silver bullion and white arsenic.

Statistics of the exports of nickel as compiled from the Customs Department's reports are shown in Table 2, and the imports in Table 3.

NICKEL.—TABLE 2.

Exports of Nickel contained in ore, matte or other product.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Lbs.	Value.
	\$		\$			\$
1890.	89,568	1897.	723,130	1903.	12,699,227	1,116,099
1891.	667,280	1898.	1,019,363	1904.	11,233,869	1,091,349
1892.	293,149	1899.	939,915	1905.	17,318,059	1,569,693
1893.	629,692	1900.	1,031,030	1906.	20,653,845	2,042,965
1894.	559,356	1901.	751,080	1907.	19,376,335	2,280,374
1895.	521,783	1902.	1,007,211	1908.	19,419,893	1,866,624
1896.	658,213					

NICKEL.—TABLE 3.

Imports of Nickel and Nickel Anodes.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1890.	3,154	1897.	4,737	1903.	26,177
1891.	3,889	1898.	5,882	1904.	14,682
1892.	3,208	1899.	9,449	1905.	19,076
1893.	2,905	1900.	6,988	1906.	15,976
1894.	3,528	1901.	12,029	1907.	19,511
1895.	4,267	1902.	15,448	1908.	36,870
1896.	4,787				

The only other important producer of nickel ore outside Canada is the French colony of New Caledonia. The exports of nickel ore from this source since 1898 have been as follows in metric tons:—

Exports of Nickel Ore from New Caledonia.*

Year.	Metric Tons.	Year.	Metric Tons.	Year.	Metric Tons.
1898.....	53,200	1902.....	129,653	1906.....	118,890
1899.....	103,908	1903.....	77,360	1907.....	120,106
1900.....	100,319	1904.....	98,655	1908.....	
1901.....	133,814	1905.....	125,289		

* Statistique de L'Industrie Minérale en France et en Algérie, Paris.

Practically all of the above ore is smelted in France, Germany, and England. The production of raw nickel at smelting works (partly estimated) is given by the "Metallgesellschaft" as follows, in metric tons:—

Production of Raw Nickel at Smelting Works in Metric Tons.

Producing Country.	1901	1902	1903	1904	1905	1906	1907	1908
United States of North America, and Canada	3,600	4,700	5,100	6,000	4,500	6,500	6,500	6,000
England.....	1,800	1,300	1,700	2,200	3,100	3,200	3,200	2,800
Germany (1)	1,700	1,600	1,600	2,000	2,700	2,800	2,600	2,600
France.....	1,800	1,100	1,500	1,800	2,200	1,800	1,800	1,400
Total production (2).....	8,900	8,700	9,900	12,000	12,500	14,300	14,100	12,800

(1) The figures of production stated for Germany only cover the output in the Kingdom of Prussia; nickel is also produced in the Kingdom of Saxony, but no data are obtainable of this production, which is, however, not important.

(2) The entire production of nickel, apart from quite insignificant quantities obtained in Germany, Norway, and the United States of America, comes from New Caledonian and Canadian ores.

Statistics of the average yearly prices of nickel in Europe are also given by the same authority as follows:—

Yearly average prices of Nickel in Europe in cents per pound and Marks per Kilogram.

Year.	Prices in Marks per Kilo.	Cents per Lb.	Year.	Marks per Kilo.	Cents per Lb.
1889.....	4·50	48·6	1899.....	2·50	27·0
1890.....	4·50	48·6	1900.....	3·00	32·4
1891.....	4·50	48·6	1901.....	2·90-3·20	31·3-34·6
1892.....	4·50	48·6	1902.....	2·90-3·50	31·3-37·8
1893.....	3·80	41·0	1903.....	3·00-3·75	32·4-40·5
1894.....	3·60	38·9	1904.....	3·00-3·75	32·4-40·5
1895.....	2·60	28·1	1905.....	3·00-3·75	32·4-40·5
1896.....	2·50	27·0	1906.....	3·00-4·00	32·4-43·2
1897.....	2·50	27·0	1907.....	3·20-3·75	34·6-40·5
1898.....	2·50	27·0	1908.....	3·00-3·50	32·4-37·8

Mark=23·8 cents. Kilogram=2·20462 lbs.

MONEL METAL.

A new alloy of nickel and copper has recently been introduced to commerce under the name of Monel metal, of which it may be interesting to give some particulars here.

The properties of the new alloy, which consists of nickel and copper in the ratio of 3 to 1, have been investigated by the International Nickel Company, and the following description has been published by the Mineral Industry of New York :—

“Throughout its entire manufacture this alloy acts as a single metal. It is sold in New York at 2 cents above the market price for copper.

“In smelting and refining the matte from which ‘Monel metal’ is made, the nickel and copper are not extracted or refined and, therefore, appear in the finished product in the same relative proportions. As the treatment consists merely in eliminating the impurities except a small percentage of reduced iron, the cost of production is much less than that of pure nickel, which is difficult and expensive of isolation.”—(Ontario Bureau of Mines, 1908).

A typical analysis of Monel metal is as follows: nickel, 68 to 72 per cent; iron, 0·5 to 1·5 per cent; sulphur, 0·014 per cent; carbon, 0·073 to 0·15 per cent; copper to balance. This alloy is silver-white and takes a brilliant finish, which it retains indefinitely. On prolonged exposure the surface assumes a greyish cast, which may be easily removed with a polishing cloth. In the rolled sheets, the surface assumes on heating a coating of oxide which has great resistance to acids. Samples of the rolled metal show no loss in 56 days’ test in pumping 40 degrees sulphuric acid.

Monel metal melts at 1350 degrees C. It can be rolled perfectly from 900 to 1200 degrees, and its annealing temperature is above 875 degrees. It can be finished hard or soft, like sheet copper. Its specific gravity, as cast, is from 8·86 to 8·87, and when rolled, from 8·94 to 8·95.

Cast Monel metal is made in two grades, with qualities that compare very favourably with the specifications for carbon-steel castings. In the rolled and annealed condition Monel metal is stronger than nickel steel.

During 1908 about 300,000 square feet of Monel sheets were used to roof the Pennsylvania tunnel station in New York city. The manufacturers, who have tested this material for roofing, state that they find it as easily worked as copper. The sheets are silvery white, exceedingly flexible and malleable, and are handled in exactly the same way as sheet copper. The rolled metal has been drawn into wire of all sizes down to 0.004". This latter is as soft and pliable as a silk thread. In the form of wire, exhaustive tests have been made of the metal for window screens, bed springs, filter cloths and other purposes where its incorrodibility makes it especially effective. In small articles, such as tacks, bolts, screws, angle braces and such stamped work as door and window trimmings, hinges, gas and electric fittings, and other small articles too numerous to mention, it is rapidly finding its way into the market. The metal works on the lathe as well as soft steel. It has been spun and pressed into hollow ware, kitchen utensils, watch cases, finger bowls, etc., with the same ease as copper or silver. One of the most satisfactory uses of Monel metal is in seamless tubes for condensers and boilers for automobiles and motor boats. The metal draws perfectly into a smooth tube and its high elastic limit and tensile strength, combined with incorrodibility, are of especial value in light machinery."

SILVER.

Owing to the rapid development of the Cobalt silver camp in Ontario during the past three years, the production of silver in Canada has, in point of value, taken second place in the list of our mineral productions, being exceeded only by coal.

The total production of silver contained in ores of all kinds, shipped to smelters or otherwise treated, was in 1908 reported as equivalent to 22,106,233 fine ounces, as compared with a production of 12,779,799 ounces in 1907, an increase of 9,326,434 ounces or 73 per cent.

The average value per ounce of fine silver in 1908, according to New York quotations, was only 52·864 cents per ounce, as compared with an average value of 65·327 cents in 1907, a decrease of about 24 per cent. Despite this severe fall in price, however, the total value of the silver production in 1908, which was \$11,686,239, shows an increase of \$3,337,580, or 40 per cent over the value \$8,348,659 in 1907.

A comparison of the production in 1907 and 1906 shows an increase in 1907 of 4,306,420 ounces or 50·8 per cent in quantity, and \$2,689,204 or 47·5 per cent in value, the average price in 1907 having been slightly less than in 1906.

Statistics of the annual production of silver since 1887 are shown in Table 1.

SILVER.—TABLE 1.
Annual Production, 1887–1908.

Year.	Ozs.	Value.	Average price per oz.	Year.	Ozs.	Value.	Average price per oz.
		\$	Cts.			\$	Cts.
1887.....	355,083	347,271	98·00	1898.....	4,452,333	2,593,929	58·26
1888.....	437,232	410,998	94·00	1899.....	3,411,644	2,032,658	59·58
1889.....	383,318	358,785	93·60	1900.....	4,468,225	2,740,362	61·33
1890.....	400,687	419,118	104·60	1901.....	5,539,192	3,265,354	58·95
1891.....	414,523	409,549	98·00	1902.....	4,291,317	2,238,351	52·16
1892.....	310,651	272,130	86·00	1903.....	3,198,581	1,709,642	53·45
1893.....		330,128	77·00	1904.....	3,577,526	2,047,095	57·22
1894.....	847,697	534,049	63·00	1905.....	6,000,023	3,621,133	60·35
1895.....	1,578,275	1,030,299	65·28	1906.....	8,473,379	5,659,455	66·79
1896.....	3,205,343	2,149,503	67·06	1907.....	12,779,799	8,348,659	65·33
1897.....	5,558,446	3,323,395	59·79	1908.....	22,106,233	11,686,239	52·86

From 1887 to 1893 the production ranged in value between \$300,000 and \$400,000, and was derived chiefly from the Provinces of Ontario and Quebec. The next three years saw a rapid increase in the production due to the development of the silver-lead ore deposits in British Columbia, and in 1896 a production of over \$2,000,000 is recorded. From that year until 1905 the production varied from

\$2,000,000 to \$3,500,000, rising rapidly during the next three years to \$11,686,239 in 1908, as a result of the discovery of the rich ores of the Cobalt district.

Ontario in 1905 produced 40·9 per cent of the total output. In 1906 this was increased to 63·7 per cent, and in 1907 to 78·1 per cent. In 1908 the proportion obtained from Ontario was 87·8 per cent and was practically all from the Cobalt district, the contribution of British Columbia being only 11·9 per cent. Statistics of the annual production in each of the provinces are separately shown in Table 2.

The average price of fine silver in New York during 1908 varied between a maximum of 56 cents per ounce in February and a minimum of 48·7 cents per ounce in December, the average being 52·864 cents per ounce.

In London the average price of silver in 1908 was 24·402 pence per standard ounce of a fineness of 925.

For the year 1907 the average price in New York was 65·327 cents, the highest being 68·8 cents in February, and the lowest 54·56 cents in December of that year.

The average monthly prices of silver in New York from 1904 to 1908, and in London during 1908, are shown in tabulated form below.

Average Monthly Prices of Silver.

Months.	New York.—Cents per fine ounce.					London.— Pence per Standard ounce (a)
	1904.	1905.	1906.	1907.	1908.	1908.
January.....	57·055	60·690	65·288	68·673	55·678	25·738
February.....	57·592	61·023	66·108	68·835	56·000	25·855
March.....	56·741	58·046	64·597	67·519	55·365	25·570
April.....	54·202	56·600	64·765	65·462	54·505	25·133
May.....	55·430	57·832	66·976	65·981	52·795	24·377
June.....	55·673	58·423	65·394	67·090	53·663	24·760
July.....	58·095	58·915	65·105	68·144	53·115	24·514
August.....	57·806	60·259	65·949	68·745	51·683	23·858
September.....	57·120	61·695	67·927	67·792	51·720	23·877
October.....	57·923	62·034	69·523	62·435	51·431	23·725
November.....	58·453	63·849	70·813	58·677	49·647	22·933
December.....	60·563	64·850	69·050	54·565	48·769	22·493
Average for the year.....	57·221	60·352	66·791	65·327	52·864	24·402

(a) 925 parts fine.

The statistics of silver production given in Table 1, as already explained, represent approximately the silver contents of the ores shipped. Important quantities of silver are now being produced in Canada, both as fine metal and as silver bullion ranging in fineness from 850 to 998·2.

Fine silver is produced at Trail, B.C., by the Consolidated Mining and Smelting Co. of Canada, chiefly from the silver-lead ores of that Province, and is shipped to China, the United States, and to the Ottawa mint.

The annual production of fine silver at Trail since 1904 has been as follows :—

Year.	Fine Ozs.	Year.	Fine Ozs.
1904.....	551,450	1907.....	1,631,422
1905.....	1,088,328	1908.....	1,956,039
1906.....	1,263,809	Total.....	6,491,048

In Ontario, ores from the Cobalt district are now being treated at three metallurgical works, operated by the following companies :—

The Canadian Copper Co., at Copper Cliff, Ont.

The Deloro Mining & Reduction Co., at Deloro, Ont.

The Coniagas Reduction Co., at Thorold, Ont.

Silver bullion of fineness varying from 850 to 998.2 is produced at these works, other products being white arsenic, and in the case of the Coniagas plant, nickel oxide and cobalt oxide. In each case residues carrying silver, arsenic, cobalt, and nickel are shipped to the United States for further refining. The silver bullion is in most instances not sufficiently fine to be shipped to the Ottawa mint and finds a market in the United States and in England.

The bullion shipped in 1907 contained 4,449,722 fine ounces of silver, and in 1908, 11,168,689 fine ounces. About 51 per cent of the total production in 1908 was, therefore, recovered in Canada as fine metal or as silver bullion.

SILVER.—TABLE 2.

Production by Provinces, 1887-1908.

Calendar Year.	ONTARIO.		QUEBEC.		BRITISH COLUMBIA.		YUKON TERRITORY.	
	Ozs.	Value.	Ozs.	Value.	Ozs.	Value.	Ozs.	Value.
		\$		\$		\$		\$
1887.....	190,495	186,304	146,898	143,666	17,690	17,301		
1888.....	208,064	195,580	149,388	140,425	79,780	74,993		
1889.....	181,609	169,986	148,517	139,012	53,192	49,787		
1890.....	158,715	166,016	171,545	179,436	70,427	73,666		
1891.....	225,633	222,926	185,584	183,357	3,306	3,266		
1892.....	41,581	36,425	191,910	168,113	77,160	67,592		
1893.....		8,689		126,439		195,000		
1894.....			101,318	63,830	746,379	470,219		
1895.....			81,753	53,369	1,496,522	976,930		
1896.....			70,000	46,942	3,135,343	2,102,561		
1897.....	5,000	2,990	80,475	48,116	5,472,971	3,272,289		
1898.....	85,000	49,521	74,932	43,655	4,292,401	2,500,753		
1899.....	202,000	120,352	40,231	23,970	2,939,413	1,751,302	230,000	137,034
1900.....	161,650	99,140	58,400	35,817	3,958,175	2,427,548	290,000	177,857
1901.....	151,400	89,250	41,459	24,440	5,151,333	3,036,711	195,000	114,953
1902.....	145,000	75,632	42,500	22,168	3,917,917	2,043,586	185,900	96,965
1903.....	17,777	9,502	28,600	15,287	2,996,204	1,601,471	156,000	83,382
1904.....	206,875	118,376	15,000	8,533	3,222,481	1,843,935	133,170	76,201
1905.....	2,451,356	1,479,442	19,620	11,841	3,439,417	2,075,757	89,630	54,093
1906.....	5,401,766	3,607,894	17,686	11,813	2,990,262	1,997,226	63,665	42,522
1907.....	9,982,363	6,521,178	16,000	10,452	2,745,448	1,793,519	35,988	23,510
1908.....	19,398,545	10,254,847	13,299	7,030	2,631,389	1,391,058	63,000	33,304

Quebec.

The small quantity of silver credited to the Province of Quebec for a number of years represents a small silver content of the pyrite ores mined at Capelton and Eustis in the Eastern townships.

Ontario.

From a production valued at only \$118,376 in 1904, the silver output of this Province has grown to a value of over \$10,000,000 in 1908. Not only does it contribute 88 per cent of the total silver production of Canada, but it now forms a very appreciable part (about 10 per cent in 1908) of the total silver output of the world.

In 1908, according to returns received at this Department, the total shipments, including ore and concentrates, were 25,682 tons containing 19,298,545 ounces of silver, besides important quantities of cobalt, arsenic, and nickel.

The total value of the ore shipped was returned as \$8,960,060, while the value of the silver calculated at the average price of silver for the year would be \$10,254,847.

The total ore shipments in 1907 were 14,644 tons, reported as containing 9,982,363 ounces of silver valued at \$6,521,178 calculated at the average price of fine silver for that year.

In the following table a record of the shipments since 1904 is given, the figures for the first three years being those published by the Ontario Bureau of Mines.

Silver Production of Cobalt Mines, 1904-1908.

Year.	No. of shipping mines.	Ore shipped Tons.	Silver contents Ozs.	Ozs. per ton.	Value of Silver.	Average silver value per ton.
					\$	\$
1904.....	4	158	206,875	1,309	118,376	749
1905.....	16	2,144	2,451,356	1,143	1,473,192	687
1906.....	17	5,335	5,401,766	1,013	3,607,894	676
1907.....	25	14,644	9,982,363	682	6,521,178	445
1908.....	30	25,682	19,398,545	755	10,254,847	399

As the camp has developed the average grade of the ore shipped has gradually diminished, although the introduction of concentration plants in 1908 and their increased use in the future will no doubt tend to keep the ore shipped up to a high standard.

No statistics are given regarding the nickel, cobalt or arsenic content of these ores, for the reason that complete information is not available. The mining companies are paid nothing for the nickel and arsenic contents and for only a small

portion of the cobalt contents¹. The Ontario Bureau of Mines estimates that the shipments in 1906 would average about 6 per cent cobalt, 3 per cent nickel, and 27 per cent arsenic ; and in 1907, 5 per cent cobalt, $2\frac{1}{2}$ per cent nickel, and 20 per cent arsenic. Nearly 30 per cent of the ore shipped from Cobalt was treated in metallurgical works in Canada, and white arsenic is being produced therefrom, of which record will be found under smelter production.

While the greater number of the operating companies hold unrestricted titles to their properties, several (nine in number) are operated, on a royalty basis, on mineral lands owned and leased by the Timiskaming and Northern Ontario Railway Commission. Mr. Arthur A. Cole, Mining Engineer to the T. & N. O. Commission, in his annual report, has compiled some very interesting statistics covering the whole district, with respect to ore shipments, concentration, power and labour, prices paid for ore, etc., from which the following has been freely drawn :—

¹ See schedules of purchasing companies.

Shipments from the Cobalt District for the Calendar Year, 1908, (in short tons.)

Mine.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Buffalo.....	89.83	63.20	53.35	51.94	46.22	41.57	31.78	43.75	32.35	00.40	51.25	28.26	536.90
Cassey Cobalt.....	.....	.....	10.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.00
Chambers-Ferland.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
City of Cobalt.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cobalt Central.....	20.00	50.00	60.97	55.26	.....	112.23	82.79	30.61	59.19	69.96	30.23	33.90	223.89
Cobalt Lake.....	24.41	32.45	24.85	28.74	23.72	26.27	20.11	22.63	123.60	115.25	65.55	73.75	761.04
Cobalt Townsite.....	20.80	.....	30.76	1.96	33.25	.....	48.93	22.63	48.53	41.41	20.53	.....	276.79
Coniagas.....	67.85	32.45	20.56	.....	.....	.....	21.90	69.95	22.81	30.37	.....	.....	225.97
Crown Reserve.....	.....	.....	93.30	.....	62.13	62.65	41.45	31.89	20.00	.....	24.50	.....	177.71
Drummond.....	.....	6.84	.....	19.27	.....	22.56	22.00	31.89	94.58	63.20	32.09	28.65	610.25
Foster.....	54.30	46.17	.....	.....	28.13	19.80	85.73	28.20	30.01	136.05	206.57	185.45	657.35
King Lake.....	20.64	21.05	92.73	30.37	34.90	79.50	31.20	152.35	546.34	121.94	76.41	84.51	1,161.38
King Edward (Watts).....	.....	.....	.....	.....	.....	.....	.....	.....	29.60	.....	72.40	.....	191.20
La Rose.....	32.00	61.45	25.90	.....	65.22	30.08	29.00	31.34	38.11	162.80	29.95	91.02	660.24
McKinley-Dar- ragh.....	459.97	71.95	388.37	431.90	161.90	180.94	467.07	56.61	37.93	.....	.....	.....	338.19
Nancy Helen.....	64.70	103.32	121.33	181.66	126.24	125.05	174.14	638.85	429.25	524.69	601.57	487.60	4,843.17
Nipissing.....	188.97	127.32	69.52	.....	.....	.....	111.40	95.51	26.53	186.37	379.64	133.70	1,808.39
Nova Scotia.....	20.39	.....	125.93	105.79	293.12	234.98	366.67	243.80	600.91	396.42	20.40	.....	201.32
O'Brien.....	202.89	264.27	20.00	13.80	53.47	21.50	20.11	21.70	19.53	26.55	20.90	475.18	3,571.96
Peterson Lake (Little Nipissing).....	.....	.....	258.78	125.53	392.00	286.96	358.97	363.23	376.60	284.49	290.68	255.11	237.95
Provincial.....	.....	.....	.....	.....	.....	20.05	20.62	.....	.....	.....	.....	.....	3,459.51
Right of Way.....	.....	.....	24.60	51.24	.....	.....	.....	.....	.....	.....	.....	.....	40.67
Silver Bar.....	.....	.....	29.35	.....	90.04	60.37	88.59	90.48	136.96	100.76	31.90	122.59	75.84
Silver Cliff.....	0.58	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	750.04
Silver Leaf.....	26.80	.....	.....	.....	.....	.....	.....	.....	.....	.....	63.77	.....	0.58
Silver Queen.....	31.00	.....	.....	35.40	32.26	.....	31.73	.....	.....	66.64	.....	69.87	160.44
Timiskaming.....	125.40	.....	119.50	21.95	59.25	.....	124.21	123.53	125.59	89.43	.....	.....	197.03
Timiskaming and Hudson Bay.....	29.70	26.90	56.12	60.50	46.30	92.88	20.65	50.65	80.97	91.80	59.77	178.96	885.70
Tretheway.....	.....	99.05	96.15	.....	29.76	31.85	31.40	190.40	143.80	345.89	122.93	63.00	1,094.23
Victoria.....	.....	88.80	153.11	96.49	159.14	133.85	115.65	180.43	26.97	95.93	65.60	292.72	1,408.69
Totals.....	1,481.27	1,184.53	1,815.27	1,312.00	1,768.35	1,563.09	2,346.10	2,487.61	3,049.19	2,950.75	2,682.51	2,701.43	25,362.10

+ 88.80 of this amount is to be credited to Bailey, which is now under lease to the Cobalt Central.

Ore Shipments from the Cobalt District for the Years 1904 to 1908.

Mine.	1904.	1905.	1906.	1907.	1908.	Totals.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Bailey			30 00		88 80	118 80
Buffalo		200 80	992 80	1,241 54	*536 90	2,972 04
Casey Cobalt					10 00	10 00
Chambers-Ferland					223 89	223 89
City of Cobalt				50 61	761 04	811 65
Cobalt Central				77 33	187 99	265 32
Cobalt Lake					225 97	225 97
Cobalt Townsite				143 22	177 71	320 93
Colonial			15 00	40 38		55 38
Coniagas		30 60	422 02	2,447 37	*616 25	3,510 24
Crown Reserve					657 35	657 35
Drummond	0 50	32 15	274 70	104 13	1,161 38	1,572 86
Foster		83 85	117 00	312 13	191 20	704 18
Green Meehan			37 03	98 39		135 42
Imperial Cobalt				14 61		14 61
Kerr Lake		54 95	158 35	319 76	660 24	1,193 30
King Edward (Watts)		19 00		31 12	338 19	388 31
La Rose	60 05	607 86	854 61	2,815 45	4,843 17	9,181 14
Lawson		14 61		61 12		75 73
McKinley-Darragh	20 00	447 09	80 45	742 42	1,808 39	3,098 35
Nancy Helen				30 10	201 32	231 42
Nipissing	57 00	486 02	2,125 08	2,538 26	3,571 96	8,778 32
Nova Scotia			43 95	272 21	237 95	554 11
O'Brien		26 32	114 18	1,491 61	3,459 51	5,091 62
Peterson Lake (Little Nipissing)					40 67	40 67
Provincial					75 84	75 84
Princess				3 93		3 93
Red Rock				45 71		45 71
Right of Way			46 25	129 37	750 04	925 66
Silver Bar					0 58	0 58
Silver Cliff					160 44	160 44
Silver Leaf		9 00		46 36	197 03	252 39
Silver Queen		44 73	130 94	478 57	885 70	1,539 94
Timiskaming				204 32	795 20	999 52
Timiskaming Cobalt			20 47	67 98		88 45
Timiskaming and Hudson Bay				149 53	1,094 23	1,243 76
Tretheway	21 00	218 58	198 48	833 58	1,408 69	2,680 33
University		16 00	155 28	60 23		231 51
Victoria					0 47	0 47
Violet		16 00	20 00			36 00
White Silver Mining Co.		28 45				28 45
Totals	158 55	2,336 01	5,836 59	14,851 34	25,362 10	48,544 59

NOTE.—The tonnage shipped during 1908 was greater than the total production of the four previous years.

* See "Concentration".

"The outputs for 1907 and 1908 were distributed for treatment as follows :—

Country.	1907.		1908.	
	Tons.	Per cent.	Tons.	Per cent.
Canada.	2,585·05	17·40	7,401·14	29·18
Great Britain.....	167·34	1·13	222·08	0·88
Germany.....			299·46	1·18
United States.....	12,098·95	81·47	17,439·42	68·76
Total.....	14,851·34	100·00	25,362·10	100·00

Almost all the ore treated in Canada was high grade, so that while the tonnage was less than one-third of the total, the value was greater than that of all the ore shipped out of the country.

With respect to concentration, Mr. Cole reports :—

"Concentration now takes a very important position in the district's development. Undoubtedly in some instances the shipments to the smelters are smaller than formerly, due to the reduction of tonnage by concentration, nevertheless in most cases the tonnage is increased by the amount of the concentrates, as the ore treated is of such a low grade that it could not stand the freight and treatment charges without concentration."

Six mills are now in successful operation in the camp, and four more are under construction.

They belong to the following companies :—

The Buffalo Mines Company, Limited.

The Standard Cobalt Mines, Limited (Cobalt Central).

The Coniagas Mines, Limited.

King Edward Cobalt Silver Mines.

The Northern Customs Concentrators, Limited, (formerly Muggley).

Nipissing Reduction Company.

Under construction :—

Colonial Mining Company.

McKinley-Darragh-Savage Mines of Cobalt, Limited.

Nova Scotia Mining Company.

O'Brien Mine.

The following table gives the tonnage of ore milled, the concentrates made, and the concentration ratio for the mills during 1908 :—

Concentration in Cobalt for 1908.

Mill.	Mines.	Ore milled.	Concen- trates.	Concen- tration.
		Tons.	Tons.	Ratio.
Buffalo.....	Buffalo.....	10,200	251·00	40-1
Cobalt Central.....	Bailey.....	4,246	97·15	44-1
	Big Pete.....	9,163	143·90	64-1
	Crown Reserve.....	669	15·22	44-1
Coniagas.....	Coniagas.....	13,605	304·00	45-1
King Edward.....	King Edward.....	1,043	21·35	38-1
McKinley-Darragh (Old Mill).....	McKinley-Darragh.....	450	20·00	28-1
Northern Customs Concentrator....	City of Cobalt.....	2,194	50·61	43-1
	Cobalt Townsite.....	1,000	31·03	32-1
	Right of Way.....	1,500	36·46	41-1
	Silver Queen.....	3,253	70·63	46-1
	Foster.....	85	10·00	9-1
Nipissing Reduction Co.....	King Edward.....	40	1·50	27-1
	Nipissing.....	1,950	40·00	49-1
	Silver Leaf.....	35	1·00	35-1
Totals.....		49,433	1,093·85	45-1

At the mines without mills the grade of ore is raised by cobbing, washing and handpicking. The ore is usually first passed over a grizzly or coarse screen, as the screenings generally carry enough values to be of shipping grade without further treatment. At the Crown Reserve and Tretheway mines jigs are used in addition to the handpicking."

"The Northern Customs Concentrators, Limited (formerly the Muggley Concentrator), and the Nipissing Reduction Company are custom mills, while the Cobalt Central mill accepts some custom work, as well as the treatment of ore from the Cobalt Central mines.

The Northern Customs Concentrators, Limited, is now treating ores on the following contract schedule:—

On ore yielding less than 20 ounces silver per ton crushed, retain 10 ounces and return balance with 50 per cent of other metals that can be sold.

20 to 40 ounces silver pay 55 per cent.

40 to 60 " " 60 "

60 to 80 " " 65 "

80 to 100 " " 70 "

The Nipissing Reduction Company will treat ores on a flat rate of \$3 per ton or on the following percentage basis:—

For ores assaying, when received at the mill:—

20 to 40 ounces silver pay 50 per cent silver values.

40 to 60 " " 55 " "

60 to 80 " " 60 " "

80 to 100 " " 65 " "

100 to 150 " " 68 " "

Power and Labour—"Two power plants are being installed on the Montreal river, and it is expected that before the end of 1909 power will be delivered in Cobalt by them, in one case in the form of compressed air, and in the other, electricity. The introduction of this power is likely to cut down the present cost by at least fifty per cent.

There are now about 3,500 men employed in the mines at Cobalt and in the immediate vicinity.

The horse-power capacity of the camp is as follows :—

At the end of	Boiler Horse-Power.
1904.....	Zero.
1905.....	150
1906.....	3,406
1907.....	7,918
1908.....	9,700

There are now 61 compressors, which have a maximum capacity of 39,336 cubic feet of free air per minute."

A complete list of the smelters receiving and treating the ores of the district is also given by Mr. Cole, together with schedules of charges or basis of payment of each.

"The following smelting companies have received and treated ore from Cobalt during 1908 :—

Anglo-French Nickel Company, Swansea, Wales.
 American Smelting & Refining Co., Perth Amboy, N.J., and Denver, Col.
 Balbach Smelting & Refining Co., Newark, N.J.
 Beer, Sondheimer Co., Hamburg, Germany.
 Canadian Copper Co., Copper Cliff, Ont.
 Coniagas Reduction Company, Thorold, Ont.
 Consolidated Mining & Smelting Co. of Canada, Trail, B.C.
 Deloro Mining & Reduction Co., Deloro, Ont.
 Pennsylvania Smelting Company, Carnegie, Pa.
 The United States Metal & Refining Co., Chrome, N.J.

Anglo-French Nickel Company, Swansea, Wales.

In the early part of 1908 this Company paid the following prices for cobalt :—

8	to 10 per cent cobalt,	35 cents per pound of cobalt.
10.1 to 12	" "	40 " "
12.1 to 14	" "	45 " "
14.1 to 16	" "	50 " "
16 per cent or over	" "	55 " "

After April the prices offered were 10 cents per pound lower than above, and at the end of the year they were out of the market entirely. There is every likelihood that the next price offered will be still lower.

American Smelting & Refining Co., New York.

The Company received ores from Cobalt at its plants at Perth Amboy, N.J., and Denver, Col. The schedule offered was as follows:—

For ores assaying 1,500 ounces or over per ton.

Silver.—Pay for 94 per cent of the silver contents at the New York quotations.

Treatment Charge.—\$10 per ton of 2,000 pounds, dry weight, plus one-half cent on each ounce of silver contained.

Arsenic.—An addition to the working charge will be made at the rate of twenty-five cents per dry ton, for each per cent of arsenic in excess of 5 per cent. Sampling free.

Payment.—Thirty days after agreement of assays.

For ores under 1,500 ounces and over 60 ounces per ton.

Silver.—Payment for 93 per cent of the silver contents at the New York quotations.

Treatment Charge.—\$9 per ton of 2,000 pounds, dry weight, plus one-half cent on each ounce of silver contained.

Arsenic.—An addition to the working charge will be made at the rate of twenty-five cents per dry ton, for each per cent of arsenic in excess of 5 per cent.

Payment.—Forty-five days after date of sampling.

If a mine is willing to contract for a total year's output of 1,000 tons the following schedule is offered:—

For ores under 1,500 ounces and over 60 ounces.

Silver.—Pay for 95 per cent of the silver contents at the New York quotations.

Treatment Charge.—\$7 per ton of 2,000 pounds, dry weight; in case of cash settlement the treatment charge is \$7.50 per ton.

No payment for cobalt or nickel.

No penalties for insoluble.

Arsenic.—An addition to the working charge will be made at the rate of twenty-five cents per dry ton for each per cent of arsenic in excess of 5 per cent.

Payment.—Payment forty-five days after agreement of assays.

The freight from Cobalt to Perth Amboy is \$10.20 per ton, and from Cobalt to Denver \$11.20 per ton.

Most of the low grade ore shipped to this Company is treated in Denver, while the high grade goes to Perth Amboy, N.J.

Balbach Smelting & Refining Company, Newark, N.J.

This Company only entered the market occasionally and had no standing schedule. The ore purchased was high grade.

Beer, Sondheimer and Company of Hamburg, Germany.

This German Company purchased high grade ore in the Cobalt camp on the following schedule:—

10,084—9

Silver.—Pay for 94 per cent of silver assay.

Treatment Charge.—\$44 smelting charge per dry ton.

Freight.—\$10 freight guarantee per gross ton. Beer, Sondheimer and Co. to supply barrels free of charge, suitable for transporting the ores.

Payment.—70 per cent paid immediately against Ledoux & Company's assays. 30 per cent paid three days after settlement of assays of Dr. Fred. Claudet of the Bank of England. Interest at six per cent (6 %) till due date. Dr. Claudet's expenses to be paid by Beer, Sondheimer and Co.

Canadian Copper Company, Copper Cliff, Ontario.

All purchases of Cobalt ores are made through the Orford Copper Company, of New York. The purchasing schedule was as follows:—

Purchaser to make payment for .—

75 % of silver per ton of ore (2,000 lbs.) when same assays 100 ozs. Ag and over.				
84	"	"	200	"
86	"	"	300	"
87	"	"	400	"
89	"	"	500	"
90	"	"	600	"
92	"	"	800	"
93	"	"	1,000	"
93½	"	"	1,300	"
93½	"	"	1,600	"
94½	"	"	2,000	"
94½	"	"	3,000	"
\$10. per ton of ore (2,000 lbs.) when same contains 6 % cobalt and over.				
20	"	"	8	"
30	"	"	12	"

No payment will be made for cobalt in ores containing less than 6 per cent cobalt, nor in which the nickel contents are greater than the cobalt contents. Further, purchaser reserves the right to return, at shipper's expense, any such ores (*i.e.* nickel contents higher than cobalt contents) received at Copper Cliff.

Ore to be delivered by seller to the Canadian Copper Company f.o.b. cars, Copper Cliff, Ont. Ore to be at shipper's risk until sampling is undertaken, as purchaser can assume no responsibility for the ore until same has been taken into its sampler.

Purchaser to sample at his expense, purchaser's and seller's representatives to be present. Assays to be made by Ledoux and Company of New York, at seller's expense, which assays are to govern in settlement.

Payment of 70 per cent of the silver returnable to the seller, as per the above scale, to be made at the New York official price for silver on the first settlement date, which shall be 35 days after the date on which sampling of the ore is completed, and the balance, 30 per cent, on the second settlement date, on the New York official price of silver on that day, which shall be 90 days after sampling of the ore is completed. The purchaser, however, reserves the right to deliver upon either or both of the settlement dates above specified, in lieu of

cash, at his option, such silver bullion (commercial bar silver) as is due the seller in settlement upon these dates, such delivery to be made in New York city.

Payment for cobalt will be made as per the above scale when the cobalt content of the ore comes within the specifications mentioned, settlement for same to be made on the first due date for silver, namely, in 35 days after completion of sampling of ore.

Purchaser has named a rate of 75 per cent silver to return to the shipper on ore running from 100 to 200 ounces per ton of 2,000 lbs. This is to be considered as a penalty clause and to apply in such cases where ores under 200 ounces have been shipped by mistake. Purchaser does not agree to accept regular shipments of ore which run less than 200 ounces of silver per ton of 2,000 pounds.

Coniagas Reduction Company, Limited, of Thorold, Ont.

Up to the present time the only ore treated by this smelter came from the Coniagas mine. It is likely, however, that custom smelting will be started during 1909.

The Consolidated Mining & Smelting Co., of Canada, Trail, B. C.

This smelting Company has so far only purchased several test carload lots.

Deloro Mining & Reduction Company, Deloro, Ont.

Tariff on Cobalt Silver Ores and Concentrates.

Silver.—Pay for 98 per cent of silver contents.

Treatment Charge.—\$20 per ton of ore and a refining charge of one cent per ounce of silver contained.

Terms of Payment.—75 per cent of net proceeds at New York quotation 30 days after completion of sampling. 25 per cent of net proceeds at New York quotation 90 days after completion of sampling.

Cobalt.—On ore containing 6 per cent and over, 10 cents per pound for cobalt contained. No payment will be made for cobalt in ores containing more nickel than cobalt. Payment for cobalt to be made with the second payment for silver. Ledoux & Company's assays accepted with the usual provisions as to umpire assays in case of unusual differences. Above assays to be made at shipper's expense. No charge for sampling. Ore to be delivered in carload lots f.o.b., Marmora station, C. O. R. This tariff is subject to change without notice.

Pennsylvania Smelting Company, Pittsburgh, Pa., Works at Carnegie, Pa.

Ores from Cobalt ranging from 50 ounces to 500 ounces per ton are purchased by the Pennsylvania Smelting Company on the following schedules:—

Silver.—Pay for 95 per cent silver, less one cent per ounce.

Treatment charge.—Nine dollars per ton. Settling price, average for 20 days following date of arrival. No payment for cobalt or nickel. The freight rate from Cobalt to Carnegie, Pa., is \$8.80 per ton.

10,084—9½

United States Metal and Refining Company, Chrome, N.J.

This Company bought only an occasional carload of high grade ore on special quotations."

A number of the shipping companies at Cobalt have published in annual reports some details of their operations, from which the following extracts have been taken.

Buffalo Mines, Ltd., year ending April 30, 1909.

"During the year 25,760 tons were broken, of which 7,283 tons were left in the mine and 18,477 tons were hoisted. Of the ore hoisted, 13,005 tons went to the mill, and 5,472 tons were added to the stock piles on the surface.

"The mine produced 13,005 tons of milling ore containing an average of 43.4 ounces of silver per ton, or 565,313 ounces. The mine also produced about 150 tons of high grade ore which averaged over 3,000 ounces of silver per ton, or 451,251 ounces, making a total of 1,016,564 ounces. In addition to this there is the ore left in the mine and added to the stock piles during the year, amounting to 12,755 tons, which will contain approximately the same percentage of silver as the ore milled.

"The mill treated during the year, 13,005 tons, which averaged 43.4 ounces of silver per ton, of which we recovered 86 per cent as follows: 279,872 ounces on the jigs, also 8,809 ounces of metallics picked from the jig concentrates and converted into bullion, and 192,048 ounces on the tables, or a total of 480,729 ounces recovered, or 317 tons of concentrates, averaging over 1,500 ounces of silver per ton."

Coniagas Mines, Ltd., year ending Oct. 31, 1908.

"The total silver produced by this property during the past year is 1,444,229 ounces, making a total to date of 3,444,000 ounces, and a careful estimate of the ore in sight as actually developed by the underground workings amounts to thirteen million ounces.

"Your Company owns the issued capital stock of the Coniagas Reduction Company, Limited, with the exception of six shares issued to directors to qualify.

"The works at Thorold are now handling the product of your mine and are running commercially as regards the production of refined silver and refined white arsenic, and we expect to place refined cobalt oxide and nickel oxide on the market very shortly, thus refining and marketing all the valuable constituents of your ores by a process which is confidently expected to yield a substantial profit."

*Crown Reserve Mining Co., Ltd., year ending December 31, 1908.***Total Production.**

Total Shipments 1908.	Weight (Lbs.)	Ozs. Silver.	Gross Value.	Freight and Treatment.	Net Value.
High grade.	799,881	1,645,570·13	\$833,604 57	\$50,433 80	\$183,170 77
Low grade.	461,689	53,384·85	26,746 05	5,127 93	21,618 12
On hand, Dec. 31, 1908.	*40,000	100,000·00	50,000 00	.....	50,000 00
Total.	1,301,570 (650·785 tons)	1,798,954·98	910,350 62	55,561 73	854,788 89

* Estimated.

VALUE OF ORE PER TON.

High grade.	4,156·71 ozs.
Low grade.	231·25 ozs.

COST OF ORE.

Operating expenses, including development and all charges except construction.	\$ 50,406 76	per oz. 2·802c.
Marketing expenses, including smelter deductions, freight, treatment, Head Office expenses, handling ore, etc.	81,666 80	" 4·706c.
Total expenses.	\$135,073 56	7·508c.
Total cost of Buildings, Plant and Equipment.	\$71,000 00	

Kerr Lake Mining Co., year ending Aug. 31, 1909.

"The production during the year amounts to 2,668,648 ounces of silver produced from 1,072 tons of ore (average contents per ton 2,489 ounces), and 600,000 pounds of screenings. The gross value of this production is, at 50 cents an ounce, \$1,334,324.

"Our cost for producing this ore amounts to \$193,799·46. The average gross value of ore per ton was \$1,244·70 at 50 cents per ounce for silver.

"The management is pleased to report that it has been enabled to continue the policy of the Directors of putting at least two tons of ore in sight for every ton which it has mined during the year.

"During the year, we have averaged 222,387 ounces as the regular monthly production, and we hope to increase this during the coming year.

Costs at the mine, including all expenses of development, per ounce.	7·26 cents.
Shipping, treatment, and sundry costs per ounce.	5·12 "
Total.	12·38 "

*La Rose Consolidated Mines Co., Twelve Months ending May 31, 1909.***Shipments.**

June 1, 1908, to May 31, 1909.

	Dry Tons.	Net Value per ton.	Gross Ozs. Silver.	Net Value.	Per cent of total Net Value.
		\$		\$	
Silver-cobalt-nickel ore.....	1671·8260	663 32	2,264,895·49	1,108,947·09	84·0
Low grade siliceous ore.....	4318·5200	41 72	604,646·43	186,539·86	14·1
Low grade cobalt ore.....	39·8430	78 90	1,288·58	3,143·75	·2
Concentrates.....	31·6210	272 13	18,528 51	8,605·13	·7
Nuggets.....	1·8605	6,940 12	26,347·57	12,912·09	1·0
Total.....	6063 6705	217 71	2,915,706·58	1,320,147 92	100·0

Average Assay of Shipments.

	Ozs. Silver per ton.	Per cent Cobalt.	Per cent Nickel.	Per cent Arsenic.
Silver-cobalt-nickel ore.....	1,354·7	8·28	8·26	36·27
Low grade siliceous ore.....	140·0			
Low grade cobalt ore.....	32·3	12·57		
Concentrates.....	586·0			27·46
Nuggets.....	14,161 8			
Average of Total.....	480·8			

Summary of Shipments for Year ending May 31, 1909.

Dry tons shipped.....	6,063·6705
Gross ounces silver contained.....	2,915,706·58
Gross silver value.....	\$1,492,046 70
Average price received per oz.—cents.....	51·173
Received from sales of cobalt.....	\$24,059 52
Received from sales of arsenic.....	\$322 15
Gross silver value plus cobalt and arsenic paid for.....	\$1,516,428 37
Smelter deduction, freight, and treatment.....	\$196,280 45
Net value received from ore sales.....	\$1,320,147 92

The cost of producing silver is estimated at \$78.43 per ton of ore, or 16·31 cents per ounce of silver.

*Nipissing Mines Company, year ending Dec. 31, 1908.***Shipments in 1908,**

—	Dry Tons.	Net Value per ton.	Gross Ozs. Silver.	Net Value.	Per cent of total net value.
		\$		\$	
High grade ore.....	694·7180	1,530 86	2,192,210·22	1,063,518 13	78·0
Low grade siliceous ore.....	2,643·5125	81 78	554,930·70	216,190 78	15·8
Low grade cobalt ore.....	159·6320	117 29	15,620·19	18,723 71	1·4
Nuggets.....	7·1365	9,157 24	131,170·33	65,350 64	4·8
Total....	3,504·999	389 10	2,893,931·44	1,363,783 26	100·0%

Average Assay of Shipments.

—	Ozs. Silver per ton.	Per cent Cobalt.	Per cent Nickel.	Per cent Arsenic.
High grade ore.....	3,155·5	10·01	5·48	37·69
Low grade siliceous ore.....	209·9			
Low grade cobalt ore.....	97·8	10·59		
Nuggets.....	18,380·2			
Average of Total.....	825·7			

Summary of Shipments 1908.

Dry tons shipped.....	3,504·999
Gross ounces silver contained.....	2,893,931·44
Gross silver value.....	\$1,504,098 26
Average price received per oz.—cents.....	51·974
Cobalt paid for—lbs.....	69,635
Received from sales of cobalt.....	\$21,568 40
Arsenic paid for—lbs.....	28,445
Received from sales of arsenic.....	\$284 45
Gross silver value plus cobalt and arsenic paid for.....	\$1,525,951 11
Smelter deduction, freight, and treatment.....	\$162,167 85
Net value received from ore sales.....	\$1,363,783 26

This Company reports the cost of production at \$167.91 per ton of ore, or 20·7 cents per ounce of silver.

British Columbia.

The chief sources of the silver production in this Province are the silver lead ores of East and West Kootenay, supplemented by the silver contained in the gold-copper-silver ores of Rossland, the Boundary and Coast districts, etc. The total production in 1908, as reported by the Provincial Mineralogist, was 2,631,389 ounces as compared with 2,745,448 ounces in 1907, a decrease of 114,059 ounces or 4·1 per cent.

About 77 per cent was obtained from ores in which the silver was found associated with lead, the remainder being found chiefly in conjunction with copper bearing ores.

The Slocan district, including Ainsworth, Slocan, Slocan City, and Trout Lake Mining divisions, provided about 50 per cent of the total provincial output of silver for the year 1908, and the Fort Steele mining division about 24 per cent all from argentiferous galena.

The production by districts is shown in the following table :—

SILVER.—TABLE 3.

Production in British Columbia by Districts, 1904-1908.

	1904.	1905.	1906.	1907.	1908.
Cassiar.....	185	477	26	2,291	14,169
Kootenay East—					
Fort Steele division.....	590,186	1,137,872	1,049,536	821,367	641,855
Other divisions.....	20,964	16,880	22,174	3,955	3,384
Kootenay West—					
Ainsworth division.....	90,004	99,781	165,915	301,322	314,142
Nelson ".....	198,795	116,729	211,122	236,837	25,067
Slocan ".....	1,540,170	1,045,948	571,613	590,998	848,595
Trail Creek ".....	181,830	147,753	126,174	126,661	129,558
Other divisions.....	148,201	121,551	79,262	122,232	173,675
Yale—					
Osyoos.....	245,155	630,407	671,661	469,206	451,323
Yale.....	625	3,863	1,034	223	23
Coast and other districts.....	206,366	118,156	91,745	70,356	29,598
Totals.....	3,222,481	3,439,417	2,990,262	2,745,448	2,631,389

Yukon.

The figures of silver production in the Yukon given in Table 2 represent the silver alloyed with the placer gold obtained from that district. On an average about one ounce of silver is contained in each five ounces of crude bullion. In 1908 about 41,000 ounces of silver are credited to the placers and 22,000 ounces to the concentrates, shipped from the Windy Arm district. In the latter district, the ores of which carry values in silver, the chief operator was the Conrad Consolidated Mines, now known as the Yukon District Gold Mining Company, Ltd. A considerable tonnage of ore was mined, and about 1,500 tons put through the concentrator, producing 150 tons of concentrates. During 1908 the district was visited by Mr. Cairnes of the Geological Survey who reported that :—

"Since the season of 1905 the Venus has been worked continuously with very satisfactory results, so that now a large amount of ore has been blocked out and some small, though high-grade shipments have been made to outside points. During the past year this is the only property in the district upon which work of

any considerable importance has been performed; the reason for this inactivity being chiefly difficulties in company organization, etc., rather than the lack of promising conditions on the claims themselves.

"The first concentrating mill built in the Yukon has, this season, been completed. It is situated on Windy Arm just below the Venus, the ore being carried from the workings to the mill by an aerial tramway. A 100 h. p. boiler, and a 75 h. p. engine, at present generates the motive power, but a water-power plant is being installed. The ore is first hand-sorted, then passed over a grizzly and the overs crushed by a Blake crusher. The ore is sized by trommels giving three products. Fine crushing is performed by a set of high-speed rolls and a Huntington mill. A set of jigs and four Callow screens concentrate the crushed and sized materials. The slimes are settled in six Callow settling tanks, and afterwards concentrated on three Wilfley tables and two Frue vanners.

The mill appears to have been well designed and constructed, and it is hoped that its erection will mark the introduction of the properties of the Conrad district into the class of producing mines."

EXPORTS.

The following table shows the statistics of silver contained in ore matte or other form exported from Canada since 1886, as compiled from the Reports of Trade and Navigation published by the Customs Department.

SILVER.—TABLE 4.

Exports of Silver in Ore Matte, etc.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1886.....	25,957	1894.....	359,731	1902.....	1,820,058
1887.....	206,284	1895.....	994,354	1903.....	1,989,474
1888.....	219,008	1896.....	2,271,959	1904.....	1,904,394
1889.....	212,163	1897.....	3,576,391	1905.....	2,777,218
1890.....	204,142	1898.....	2,902,277	1906.....	5,686,444
1891.....	225,312	1899.....	1,623,905	1907.....	9,941,849
1892.....	56,688	1900.....	2,341,872	1908.....	12,403,482
1893.....	213,695	1901.....	2,026,727		

ZINC.

The production of zinc ore in Canada in 1908 is reported as 452 tons valued at \$3,215, all having been derived from the Richardson mine in Olden township, Frontenac county, Ontario.

Several thousand tons of zinc concentrates were shipped from British Columbia mines late in the year, but as smelter returns had not been received at the close of the year, these were not included by the Provincial Mineralogist in his statement of the year's production, but will be credited to the year 1909. The Whitewater and Whitewater Deep mines are reported to have shipped about 5,000 tons of zinc concentrates produced during 1908, together with about 2,500 tons accumulated from previous years' operations.¹

The Canadian Metal Co. is also reported to have shipped a considerable tonnage from their plant at the Bluebell mine in Kootenay lake.¹

In 1907 the ore shipments were 1,573 tons valued at \$49,100, being made up of 217 tons of ore valued at \$3,000 from the Richardson mine in Ontario, and 1,356 tons valued at \$46,100 from British Columbia mines. Of the latter amount the Lucky Jim mine of the Slocan shipped 1,120 tons which had been mined in 1906.

The zinc smelting plant erected at Frank, Alberta, by the Canadian Metal Company, still remains idle, and the furnace at Nelson built for the reduction of zinc ores by the Snyder Electro Thermic Smelting process has not yet reached the stage of commercial operation, so that all the zinc ores shipped have been sent to the United States and Europe for reduction.

The United States tariff on zinc ores has for a number of years been subject to differences of opinion, and a number of contradictory decisions have been rendered with respect to it. Recently, however, the tariff has been revised, and is as follows:—

On ores containing less than 10 per cent, free of duty.

On ores containing 10 per cent or more and less than 20 per cent, $\frac{1}{4}$ c. per lb.

On ores containing 20 per cent or more and less than 25 per cent, $\frac{1}{2}$ c. per lb.

On ores containing 25 per cent or more, one cent per pound.

All rates being based on the metallic contents of the zinc.

Statistics of the production and imports of zinc are given in Tables 1 to 4.

The imports of zinc in block and sheets, and of spelter totalled, during the fiscal year 1908, about 4,298 tons valued at \$505,450, in addition to about \$19,240 worth of manufactures of zinc.

¹Minister of Mines report for British Columbia, 1908, pp. 24, 94.

ZINC.—TABLE 1.
Annual Production of Zinc.

Calendar Year.	Zinc Ore Shipped.		Metallic Zinc in Ore Shipped.	
	Tons.	Spot Value.	Pounds.	Final Value.
1898.....	1,162	\$ 11,000	788,000	\$ 36,011
1899.....	865	18,165	814,000	46,805
1900.....	261	4,810	212,000	9,342
1901.....	158	1,659	142,200	6,882
1902.....	1,000	10,500	900,000	48,660
1903.....	597	3,700	477,568	24,356
1904.....	9,413	139,200	*	*
1905.....	1,154	23,800	*	*
1906.....	1,573	49,100	*	*
1907.....	452	3,215	*	*
1908.....				

* Figures not available.

ZINC.—TABLE 2.
Imports of Zinc in Blocks, Pigs, and Sheets.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	13,805	\$67,881	1890.....	18,236	92,530	1900.....	28,748	156,167
1881.....	20,920	94,015	1891.....	17,984	105,023	1901.....	20,527	103,457
1882.....	15,021	76,631	1892.....	21,881	127,302	1902.....	34,871	141,560
1883.....	22,765	94,799	1893.....	26,446	124,360	1903.....	26,646	142,827
1884.....	18,945	77,373	1894.....	20,774	90,680	1904.....	25,553	138,057
1885.....	20,954	70,598	1895.....	15,061	63,373	1905.....	25,141	141,514
1886.....	23,146	85,599	1896.....	20,223	80,784	1906.....	24,462	138,438
1887.....	26,142	98,557	1897.....	11,946	57,754	1907 (9 mos.)	18,427	127,221
1888.....	16,407	65,827	1898.....	35,148	112,785	1908 duty free	30,362	191,081
1889.....	19,782	83,935	1899.....	18,785	107,477			

ZINC.—TABLE 3.
Imports of Spelter.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
1880.....	1,073	5,301	1890.....	14,570	71,122	1900.....	5,836	29,416
1881.....	2,904	12,276	1891.....	6,249	31,459	1901.....	14,621	58,283
1882.....	1,654	7,779	1892.....	13,909	62,550	1902.....	18,356	80,757
1883.....	1,274	5,196	1893.....	10,721	49,822	1903.....	23,159	110,817
1884.....	2,239	10,417	1894.....	8,423	35,615	1904.....	33,952	164,751
1885.....	3,325	10,875	1895.....	9,249	30,245	1905.....	37,941	206,244
1886.....	5,432	18,238	1896.....	10,897	40,548	1906.....	50,137	290,686
1887.....	6,908	25,007	1897.....	8,342	32,826	1907 (9 mos.)	42,465	269,044
1888.....	7,772	29,762	1898.....	2,794	13,561	1908 Dutyfree	55,593	314,369
1889.....	8,750	37,403	1899.....	5,450	29,687			

*Spelter in blocks and pigs.

ZINC.—TABLE 4.
Imports of Zinc, Manufactures of.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
1880.....	\$ 8,327	1890.....	6,472	1900.....	11,475
1881.....	20,178	1891.....	7,178	1901.....	6,882
1882.....	15,526	1892.....	7,563	1902.....	6,683
1883.....	22,599	1893.....	7,464	1903.....	9,754
1884.....	11,952	1894.....	6,193	1904.....	12,682
1885.....	9,459	1895.....	5,581	1905.....	11,912
1886.....	7,345	1896.....	6,290	1906.....	12,917
1887.....	6,561	1897.....	5,145	1907 (9 months)...	12,556
1888.....	7,402	1898.....	10,503	1908.....	19,240
1889.....	7,233	1899.....	14,661		

1908	{ Zinc seamless drawn tubing..... " manufactures of, N.O.P.....	Duty Free. 25 %
		\$ 53 \$ 19,187
	Total ..	\$ 19,240

MISCELLANEOUS METALLIC MINERALS.

ALUMINIUM.

The Northern Aluminium Company have extensive works at Shawenegan Falls, Que., where they manufacture aluminium from imported ores. They have also a well equipped wire mill where the metal is made into aluminium wire and cables, which are now used extensively in transmission of electricity. No Canadian raw material is used, but it is interesting to mention the industry as it may stimulate search and prospecting for ores of aluminium. The Northern Aluminium Company use bauxite imported from France, Germany, and the United States.

There being but one firm engaged in production, we are precluded from publishing statistics of production.

The exports of aluminium during the past five years have been as follows:—

Exports of Aluminium.

Calendar Year.	Ingots, bars, etc.		Manufactures.
	Lbs.	Value.	Value.
1904.....	1,288,314	\$ 278,270	\$ 118
1905.....	2,535,386	508,219	1,588
1906.....	4,521,486	899,113	2,244
1907.....	5,473,203	1,109,353	1,499
1908.....	1,713,800	399,785	1,727

Prices.—The price of aluminium in New York during the first half of January, 1908, was about 38 cents per pound. About the middle of the month the quotation was reduced to 33 cents and remained constant until the middle of October when a further reduction took place, the prices quoted until the end of the year ranging from 22 to 24 cents. During the last months of the year the prices quoted in Europe were from 13 to 14 cents per pound.

ANTIMONY.

Direct returns from the mines did not record any production of antimony ore during 1908. The trade statistics, however, show an export of antimony ore, chiefly to Great Britain, during the first three months of the year, of 148 tons, valued at \$5,443, and this figure has been taken as production.

In 1907 the production was 2,016 tons of antimony ore shipped, valued at \$65,000, and 63,850 pounds of refined antimony valued at \$5,108.

In British Columbia some of the lead ores contain a small percentage of antimony, about one-third of one per cent, and some refined antimony was produced at Trail during 1907. Owing to the low price of the metal in 1908, however, it was considered unprofitable to attempt to recover the metal.

The discovery of a large body of stibnite in the Slocan district was referred to in the last report. The owners, the Golden Canon Gold and Silver Mining Company, did some development work in 1907 but made no shipment. No work was done on the property in 1908.

In Nova Scotia the Dominion Antimony Company operated their mine at West Gore in Hants county during 1907, throughout the year, but closed down in 1908 owing to legal difficulties. The quantity of ore mined in 1907 was 4,480 tons, and 2,016 tons were shipped. A concentrating mill was erected for the treatment of these ores and its operation was reported to be a complete success.

In New Brunswick the Canadian Antimony Company have been opening up the old antimony mines at St. George, but no shipments have been made as yet.

Statistics of production, exports, and imports are given in the three following tables:—

Annual Production of Antimony Ore.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886	665	\$31,490	1898	1,344	\$20,000
1887	584	10,860	1899 to 1904	Nil.	Nil.
1888	345	3,696	1905 (a)	527	.....
1889	55	1,100	1906 (a)	782	.....
1890	26½	625	1907	2,016	65,000
1891	10	60	1908 (b)	148	5,443
1892 to 1897	Nil.	Nil.			

(a) As recorded by the Nova Scotia Department of Mines; no value given.

(b) Exports.

Exports of Antimony Ores.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1880	40	\$1,948	1892 to 1897.....	Nil.	Nil.
1881	34	3,308	1898	1,232	\$15,295
1882	323	11,673	1899	6 $\frac{3}{4}$	190
1883	165	4,200	1900	210	3,441
1884	483	17,875	1901	10	1,643
1885	758	36,250	1902	90	13,658
1886	665	31,490	1903	33	4,332
1887	229	9,720	1904	160	7,237
1888	352 $\frac{1}{2}$	6,894	1905	525	27,118
1889	30	695	1906	420	17,064
1890	38	1,000	1907	1,327	37,807
1891	3 $\frac{1}{2}$	60	1908	148	5,443

Imports of Antimony.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
1880	42,247	\$ 5,903	1895	79,707	\$ 6,131
1881		7,060	1896	163,209	9,557
1882	183,597	15,044	1897	134,661	8,031
1883	105,346	10,355	1898	156,451	12,350
1884	445,600	15,564	1899	289,066	16,851
1885	82,012	8,182	1900	186,997	20,001
1886	89,787	6,951	1901	350,737	24,714
1887	87,827	7,122	1902	504,822	39,276
1888	120,125	12,242	1903	868,146	65,434
1889	119,034	11,206	1904	418,943	27,112
1890	117,066	17,439	1905	186,454	12,828
1891	114,084	17,483	1906	403,918	56,297
1892	180,308	17,680	1907 (9 mos).....	321,385	71,493
1893	181,823	14,771	1908	484,899	66,484
1894	139,571	12,249			
1908 { Antimony, or regulus of, not ground, pulverized or otherwise manufactured..... Antimony salts.....			Duty.		
			Free.	380,287	49,648
			"	104,612	16,836
Total.....				484,899	66,484

COBALT.

Cobalt is an important constituent of the rich silver-cobalt-nickel-arsenides of Coleman and adjacent townships, more familiarly known as the "Cobalt" district, Province of Ontario. The metal is also found as a constituent of the nickel-copper ores of the Sudbury district in the same Province.

With the exception of a small amount of cobalt oxide recovered during 1908 at the metallurgical works of the Coniagas Reduction Co., at Thorold, Ont., from the ores of the Coniagas mine at Cobalt, there has been no production of this metal in Canada.

Small quantities of ores have been shipped from the Cobalt district primarily as cobalt ores. With respect to the greater part of the ore shipped in which silver was the chief constituent of value, most of the purchasing smelters made no allowance whatever for cobalt. The Canadian Copper Co., and the Deloro Mining and Reduction Co., however, each paid for cobalt in the ore when the cobalt went 6 per cent or over, provided that the nickel contents were lower than the cobalt contents.¹

No complete statistics are available either as to the total amount of cobalt contained in the ores shipped, as determined by sampling analyses, or as to the amount of cobalt finally recovered by the purchasing companies.

The Ontario Bureau of Mines has estimated the cobalt contents of the ore shipped as shown in the following table in which the value received by the shippers for cobalt is also shown.

Year.	Ores shipped.	Estimated total cobalt contents.	Per cent.	Value received by shippers for cobalt.
	Tons.	Tons.	%	\$
1904.....	158	16	10·1	19,960
1905.....	2,144	118	5·5	100,000
1906.....	5,335	321	6·0	80,704
1907.....	14,644	739	5·0	104,426
1908.....	25,624	1,224	4·7	111,118

In 1908 returns received by this Branch showed total shipments of 25,682 tons of ore; the returns of cobalt contents, though incomplete, showed a total of 928 tons, or an average of 3·6 per cent. The amount paid the mining companies for cobalt was reported as \$113,423.

¹ See purchasing schedules of these companies, pages 130, 131.

Of the above ore shipments 7,182 tons were treated in metallurgical works in Canada, and with the exception of a few hundred pounds of cobalt oxide obtained at the works at Thorold, the cobalt remained in the residues, which were shipped chiefly to United States smelters for treatment. The residues contained 692,170 pounds of cobalt, or an average of 4.82 per cent of the ore treated. If the ore exported be assumed to average as high in cobalt as the ore treated in Canada the total cobalt contents in 1908 would be at least 1,235 tons.

The Nipissing Mines Company, as stated in its last annual report, shipped during the twelve months ending Dec. 1908, 694,718 tons of high grade silver ore averaging 10.01 per cent cobalt, and 159,632 tons of low grade cobalt ore averaging 10.59 per cent cobalt, the total cobalt contents of the shipments being 172,892 pounds. Only 69,685 pounds of cobalt were paid for, however, by the purchasing smelters, for which the Company received \$21,568.40.

The Larose Consolidated Mines Co., during the twelve months ending May 31, 1909, shipped 1,671,826 tons of high grade silver ore averaging 8.28 per cent cobalt, and 39,843 tons of low grade cobalt ore averaging 12.57 per cent cobalt. The amount paid for cobalt, however, by the purchasing smelter, was only \$24,059.52.

The price of cobalt oxide (78.6 per cent Co) in New York during 1907 remained uniformly at \$2.50 per pound. In 1908 the price fell to \$1.45 in April, and to \$1.40 in November.

The production of cobalt oxide in the United States in 1908 is stated in the 'Mineral Industry' to have been about 100,000 pounds.

MERCURY.

There has been no production of mercury since 1897. The small production reported in 1895, 1896, and 1897, was derived from the deposits at the western end of Kamloops lake, B.C. These deposits consist of quartz veins containing pockets of cinnabar. These veins are in a zone of decomposed volcanic rock of Tertiary age.

Production of Mercury.

Calendar Year.	Flasks (76½ lbs.)	Price per flask.	Value.
1895.....	71	\$ 33 00	\$ 2,343
1896.....	58	33 44	1,940
1897.....	9	36 00	324

Imports of Mercury.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
1882.....	2,443	\$ 965	1891.....	29,775	\$ 20,223	1900..	85,342	\$ 51,987
1883.....	7,410	2,991	1892.....	30,936	15,038	1901.....	140,610	94,564
1884.....	5,848	2,441	1893.....	50,711	22,998	1902.....	97,283	56,615
1885.....	14,490	4,781	1894.....	36,914	14,483	1903.....	164,968	91,625
1886.....	13,316	7,142	1895.....	63,732	25,703	1904.....	151,107	80,658
1887.....	18,409	10,618	1896.....	77,869	32,343	1905.....	103,330	48,412
1888.....	27,951	14,943	1897.....	76,058	33,534	1906.....	150,364	69,505
1889.....	22,931	11,844	1898.....	59,759	36,425	1907 (9 mos.)..	98,368	45,662
1890.....	15,912	7,677	1899.....	103,017	51,695	1908 Duty free	178,411	76,549

MOLYBDENUM.

Although there are numerous occurrences of molybdenite in Canada of more or less undetermined value, there has been very little production of the mineral.

In 1902, about 6,500 pounds of molybdenum valued at \$400 were reported as having been taken from a deposit in the township of Laxton, county of Victoria, by John Webber of Toronto.

In 1903, Mr. A. W. Chisholm of Kingston reported the shipment to the United States and elsewhere of 85 tons of molybdenum ore, valued at \$1,275, culled from about 500 or 600 tons of rock taken from the east half of lot 5, concession XIV, Sheffield township, Addington county.

PLATINUM.

The chief source of the platinum production in Canada has been the placer gravels of British Columbia, principally in the Similkameen River district. The nickel-copper ores of the Sudbury district also carry small quantities of the metals of the platinum group, and these are now being partly recovered. During 1902, 1903, and 1904, considerable quantities of platinum were recovered from accumulated residues resulting from the treatment of the mattes from Sudbury.

In 1906 there was practically no production of platinum from placer deposits, while the amount of platinum metals recovered from the treatment of the nickel-copper mattes is reported by the Ontario Bureau of Mines to have been 314 ounces valued at \$5,652. This has been tabulated under palladium.

During 1907 and 1908 there has been no production recorded either of platinum or metals of the platinum group.

The Provincial Mineralogist of British Columbia reports that "While platinum is found in many of the alluvial gold workings where it can be saved as a by-product, the saving of it in a small way is attended with so much trouble that it has been practically neglected and no appreciable production made."

Annual Production of Platinum.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1887.....	5,600	1894.....	950	1901.....	457
1888.....	6,000	1895.....	3,800	1902.....	46,502
1889.....	3,500	1896.....	750	1903.....	33,345
1890.....	4,500	1897.....	1,600	1904.....	10,872
1891.....	10,000	1898.....	1,500	1905.....	500
1892.....	3,500	1899.....	825	1906.....	*
1893.....	1,800	1900.....	Nil.		

*See under Palladium.

Imports of Platinum.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1883.....	113	1892.....	1,952	1901.....	20,263
1884.....	576	1893.....	14,052	1902.....	19,357
1885.....	792	1894.....	7,151	1903.....	21,251
1886.....	1,154	1895.....	3,937	1904.....	28,112
1887.....	1,422	1896.....	6,185	1905.....	61,719
1888.....	13,475	1897.....	9,031	1906.....	54,494
1889.....	3,167	1898.....	9,781	1907.....	113,485
1890.....	5,215	1899.....	9,671	1908*	60,390
1891.....	4,055	1900.....	57,910		

*Platinum wire and platinum in bars, strips, sheets or plates, platinum retorts, pans, condensers, tubing and pipe, imported by manufacturers of sulphuric acid for use in their works. Duty free.

PALLADIUM.

It has been known for a long time that palladium is present in the nickel ore of the Sudbury district, but in past years no definite information could be obtained as to whether the metals of the platinum group were saved in the treatment which the ores and mattes underwent. As far back as 1889 it was discovered that sperrylite, the arsenide of platinum, which is present in the Sudbury ores, contained traces of palladium, but the occurrence was noted as being only of mineralogical interest. Of late years, however, the producers of platinum have not been able to supply the demand, and palladium is being considered as a possible substitute on account of its malleability and high melting point (palladium 1500°C , platinum 1750°C).

The metal palladium, as well as platinum, as already explained, has been recovered from the residues resulting from the treatment of the nickel-copper ores of Sudbury, Ont., and statistics of production as obtained by the Ontario Bureau of Mines have been as follows:—

	Ozs.	Value.
1902 Palladium.....	4,411	\$86,014
1903 ".....	3,177	61,952
1904 ".....	952	18,564
1905 Metals of the Platinum Group.....	1,562	28,116
1906 ".....	314	5,652
1907-1908*.....	Nil.	Nil.

*Ontario Bureau of Mines Report, 1908.

TIN.

Tin ores have not yet been found in sufficient quantities in Canada to be of economic importance.

The occurrence of tin ore has been reported from several localities, the most important, perhaps, being the recent discovery of cassiterite near New Ross, Lunenburg county, Nova Scotia. This occurrence has not yet been found of economic value. It has been visited by several officers of the Geological Survey, and reports upon it may be found in the Summary Report of the Geological Survey Branch of the Department of Mines for 1907, pages 77 and 80 to 83, and in the Report for 1908, page 154.

The imports of tin and manufactures thereof, into Canada, are shown in the following table :—

Imports of Tin and Tinware.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880.....	281,880	1890.....	1,289,756	1900.....	2,418,455
1881.....	413,924	1891.....	1,206,918	1901.....	2,339,109
1882.....	790,285	1892.....	1,594,205	1902.....	2,293,958
1883.....	1,274,150	1893.....	1,242,994	1903.....	2,712,186
1884.....	1,018,493	1894.....	1,310,389	1904.....	2,389,557
1885.....	1,060,883	1895.....	973,397	1905.....	2,791,757
1886.....	1,117,368	1896.....	1,237,684	1906.....	3,336,948
1887.....	1,187,312	1897.....	1,274,108	1907.....	2,719,813
1888.....	1,164,273	1898.....	1,550,851	1908.....	4,059,281
1889.....	1,243,794	1899.....	1,372,813		

1908	Tin crystals.....	Duty Free.	\$ 2,894
	Tin in blocks, pigs and bars.....	"	1,282,004
	Tin plates and sheets.....	"	2,437,540
	Tin foil.....	"	79,897
	Tinware, plain, japanned or lithographed, and all manufactures of tin, N.E.S.....	25 % Free.	256,638
	Tin strip waste.....		308
Total.....			4,059,281

TUNGSTEN.

The known occurrence of tungsten ores at several localities in Canada, and the special values of the metal in the metallurgy of steel were considered of sufficient importance to justify a special investigation of the ores of this metal in Canada, which was undertaken by the Mines Branch in 1908. The work was entrusted to Mr. T. L. Walker, Ph. D., of Toronto University, and his report covering all the reported occurrences of tungsten ores in Canada has now been published. In concluding his report Mr. Walker states that :—

“The investigation of material for this report has rendered it possible to make a complete statement of the distribution of tungsten ores in Canada, Since beginning the work, information has been obtained from mining engineers, assayers and others, regarding occurrences of these ores which were not known except in the immediate vicinity of the mines where the ores had been found. From the chemical examination of concentrates many new sources of tungsten have been revealed. In most instances the quantity of ore available is insignificant, in others the grade is very low. Such discoveries have their importance, however, since they indicate the probability of the discovery of richer or larger deposits in the vicinity. During the past summer, scheelite deposits of a very promising character were discovered in Halifax county, N.S. This discovery may in some measure be regarded as one of the indirect results of this investigation.

“It cannot be claimed that there are in Canada any well developed and established tungsten ore mines. On the other hand there are numerous districts where these ores occur, and there are many claims well worth developing. Hitherto no tungsten production has been credited to Canada in our mineral statistics. It would seem very strange, if, from the known tungsten claims and tungsten regions, some regular mines should not result from exploration.”

Probably the most important deposits from the point of view of possible economic working are those discovered in 1908 in Halifax county, Nova Scotia. Mr. Faribault of the Geological Survey, visited these deposits in October of that year and has described them in his Summary Report.¹

The first discovery of these tungsten mineral veins was in the Moose River Gold district on Stillwater brook. Mr. Faribault states that :—

“Fourteen veins bearing scheelite have so far been uncovered by Messrs. Reynolds and Currie, all of which occur in slate bands interstratified between beds of quartzite and dip north at angles of 60 to 75 degrees. They are comprised in a well defined zone 200 feet wide, limited on the north by the north syncline and on the south by the middle anticline. In depth these veins will probably be found to terminate at the syncline, but being of deep-seated origin they are undoubtedly

¹ Summary Report Geological Survey 1908 p. 155.

underlaid by a succession of other veins which should offer a promising field for deep mining. Further exploration will probably disclose scheelite veins outside that zone, especially south of the middle anticline, where the rocks are more crumpled and fractured, but the veins may not be so well defined and continuous. Several large interbedded quartz veins are exposed on the north side of the south anticline 200 feet south of the west bend on the brook. One of these is 10 feet thick, and forms a prominent saddle of white quartz, pitching west on the anticline. These veins have more the characteristics of the gold-bearing veins and do not appear to carry scheelite.

"The extent of the mineralized area is not known, but veins enough have been exposed to show the importance of the deposit from an economic point of view. That the area is much larger than might be supposed from the veins exposed by Messrs. Reynolds and Currie is shown by the fact that scheelite was found in drift in a line extending 300 yards west from Stillwater brook, and in an isolated boulder a mile and a quarter west. Some was found *in situ* about half a mile east, in a vein 20 feet south of the Johnston shaft, also in a vein just east of the main road at Moose River Gold mines, as well as on the dump at Kaulbach's last vertical shaft. Scheelite has, therefore, been found over a space of 3 miles along the Moose River anticline. Further systematic prospecting along this anticline should reveal other veins, and the fact that those thus far found are of the regular bedded type, should be of much assistance to the intelligent prospector in the pursuit of his work."

NON-METALLIC PRODUCTS.

ABRASIVE MATERIALS.

The abrasives produced in Canada comprise corundum, the various sandstone abrasives, such as grindstones, pulpstones, whetstones, etc., and tripolite or infusorial earth.

CORUNDUM.

The trade depression of 1908 seriously affected the production of corundum in Canada, the mills of the two operating companies being closed down for the first ten months of that year.

Detailed statistics of output and shipments during 1907 and 1908 are as follows :—

	1907.	1908.
Rock treated.	60,532 tons.	2,678 tons.
Grain corundum graded.	5,365,257 lbs.	212,150 lbs.
Shipments—		
Grain corundum sold in Canada	328,000 "	198,600 "
" " sold in other countries.	3,457,450 "	1,980,190 "
Total sales.	3,785,450 lbs.	2,178,790 lbs.

The mining of corundum in Canada was begun in 1900, the mineral being found in Radcliffe, Carlow and adjacent townships. Two companies have been mining corundum rock and operating mills for the separation of the mineral for several years. The Canada Corundum Company, the original and larger operator, has worked the Craig mine at Craigmont in Renfrew county, while the Ashland Emery and Corundum Company, which operates on a comparatively small scale, has a mine and mill at Burgess mines in the same district. The former Company, owing to the decline in demand for its product, and having on hand a large assorted stock of grain corundum, shut down its plant on Nov. 30, 1907.

In November, 1908, a company was organized under the name of the Manufacturers Corundum Co., Ltd., to operate the plant of this Company under lease. The greater part of the remainder of the year was spent in preparing for operations, so that the full plant was in operation for about 20 days only.

Statistics of shipments since 1900 are shown as follows :—

Grain Corundum.	Lbs.	Value.	Average Price.
		\$	Cents.
1900.....	6,000	300	5·00
1901.....	773,590	46,415	5·97
1902.....	1,535,730	84,465	5·49
1903.....	1,406,000	77,510	5·51
1 Tons corundum ore.....	267	2,670	(\$10 00)
1904.....	1,986,290	109,545	5·51
1905.....	3,288,267	149,153	4·48
1906.....	4,548,176	204,973	4·50
1907.....	3,785,450	177,922	4·70
1908.....	2,178,790	100,398	4·60

Statistics since 1900, showing the quantities of ore treated, the corundum produced, and the sales or shipments are given in the following table :—

ABRASIVE MATERIALS—TABLE 1.

Production of Corundum Ore and Corundum.

Calendar Year.	Corundum-bearing rock treated.	Grain Corundum Graded.	Grain Corundum sold in Canada.	Grain Corundum Exported.	Total of Grain Corundum.
	Tons.	Tons.	Tons.	Tons.	Tons.
1900.....		60			3
1901.....	4,134	444	85	302	387
1902.....	7,996	806	106	662	768
1903.....	(a) 8,877	839	85	618	703
1904.....	28,187	1,654	116	877	993
1905.....	23,571	1,681	140	1,504	1,644
1906.....	45,719	2,914	162	2,112	2,274
1907.....	60,532	2,682	164	1,728	1,892
1908.....	2,678	106	99	990	1,089

(a) In addition to this amount which was milled in Canada, 267 tons of ore were mined and shipped to the United States for treatment there.

GRINDSTONES, PULPSTONES, ETC.

The manufacture of grindstones is an industry which has been carried on for many years in the Provinces of Nova Scotia and New Brunswick. The output to-day is no greater than it was twenty years ago, and there has been comparatively little variation from year to year. The total production, including wood pulpstones, etc., in 1907 was 5,414 tons valued at \$60,376, and in 1908 was 3,843 tons valued at \$48,128.

These abrasives are quarried from the Millstone-grit of the Carboniferous formation, which occupies a large portion of the surface of the eastern half of the Province of New Brunswick and the northern and northwestern parts of Nova Scotia. The localities at which quarrying operations are chiefly carried on are at

Lower cove, and Quarry island near Merigomish, in Nova Scotia, and in New Brunswick on Chaleur bay and at Woodpoint and Rockport on the Bay of Fundy.

The grindstones are all shipped in a finished condition and are worth from \$10 to \$12 per ton.

About 63 pulpstones were shipped in 1908, which found a market in Canadian and United States pulp mills. These stones are made 27" face by 54" diameter, and weigh about 2½ tons each. They sell at \$75 per stone. Scythe or whetstones are manufactured by one firm. These are put up in one-quarter gross boxes, thirty pounds to the box, and are worth about \$50 per ton; about 450 gross were made in 1908. At some of the quarries there is a considerable production of foundation and building stone, besides rough stone for breakwater and harbour works.

Statistics of the production by provinces since 1886 are given in the table following:—

ABRASIVE MATERIALS.—TABLE 2.

Annual Production of Grindstones.

CALENDAR YEAR.	NOVA SCOTIA.		NEW BRUNSWICK.		TOTAL.		AVERAGE VALUE PER TON.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	
		\$		\$		\$	\$
1886.....	1,765	24,050	2,255	22,495	4,020	46,545	11 58
1887.....	1,710	25,020	3,582	38,988	5,292	64,008	12 10
1888.....	1,971	20,400	3,793	30,729	5,764	51,129	8 87
1889.....	712	7,128	2,692	23,735	3,404	30,863	9 07
1890.....	850	8,536	4,034	33,804	4,884	42,340	8 67
1891.....	1,980	19,800	2,499	22,787	4,479	42,587	9 51
1892.....	2,462	27,610	2,821	23,577	5,283	51,187	9 69
1893.....	2,112	21,000	2,488	17,379	4,600	38,379	8 34
1894.....	2,128	16,000	1,629	16,717	3,757	32,717	8 71
1895.....	1,400	14,000	2,075	17,932	3,475	31,932	9 19
1896.....	1,450	14,500	2,263	18,810	3,713	33,310	8 97
1897.....	1,407	17,500	3,165	24,840	4,572	42,340	9 26
1898.....	1,422	12,350	3,513	32,425	4,935	44,775	9 07
1899.....	1,378	10,300	3,133	32,965	4,511	43,265	9 59
1900.....	1,411	12,600	4,128	40,850	5,539	53,450	9 65
1901.....	358	3,200	4,223	42,490	4,581	45,690	9 97
1902.....	1,074	8,118	3,559	36,000	4,633	44,118	9 52
1903.....	1,337	9,562	4,201	38,740	5,538	48,302	8 72
1904.....	1,029	7,332	3,620	35,450	4,649	42,782	9 20
1905.....	1,020	10,200	4,520	52,175	5,540	62,375	11 25
1906.....	1,023	9,680	4,340	50,134	5,363	59,814	11 15
1907.....	551	4,480	4,863	55,896	5,414	60,376	11 15
1908.....	473	4,803	3,370	43,325	3,843	48,128	12 52

The imports of grindstones into Canada, principally into the Provinces of Ontario and Quebec, reached a total value in 1908 of \$65,125, made up of grindstones not mounted and not less than 3 feet in diameter to the value of \$56,319, and other grindstones to the value of \$8,806.

The imports of all abrasives, including grindstones, burrstones, emery, and pumice stone, reached a total valuation in 1908 of \$96,232.

Statistics of the exports and imports of grindstones and other abrasives are shown in tables following:—

ABRASIVE MATERIALS.—TABLE 3.

Exports of Grindstones.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1884.....	28,186	1892.....	23,567	1901*.....	29,130
1885.....	22,606	1893.....	21,672	1902*.....	24,489
1886.....	24,185	1894.....	12,579	1903*.....	27,659
1887.....	28,769	1895.....	16,723	1904*.....	35,612
1888.....	28,176	1896.....	19,139	1905*.....	24,868
1889.....	29,982	1897.....	18,807	1906*.....	31,978
1890.....	18,564	1898*.....	25,588	1907.....	32,534
1891.....	28,433	1899*.....	23,288	1908.....	19,721
		1900*.....	42,128		

* Including stone for the manufacture of grindstones.

ABRASIVE MATERIALS.—TABLE 4.

Imports.

Fiscal Year.	GRINDSTONES.		Burrstones. (c) Value.	Emery. (a) Value.	Mfrs. of Emery. (b) Value.	Pumice Stone. (d) Value.
	Tons.	Value.				
		\$	\$	\$	\$	\$
1880.....	1,044	11,714	12,049			
1881.....	1,359	16,895	6,337			
1882.....	2,098	30,654	15,143			
1883.....	2,108	31,456	13,242			
1884.....	2,074	30,471	5,365			
1885.....	1,148	16,065	4,517	5,066	4,920	9,384
1886.....	964	12,803	4,062	11,877	5,832	2,777
1887.....	1,309	14,815	3,545	12,023	4,598	3,594
1888.....	1,721	18,263	4,753	15,674	4,001	2,890
1889.....	2,116	25,564	5,465	13,565	3,948	3,232
1890.....	1,567	20,569	2,506	16,922	5,313	3,003
1891.....	1,381	16,991	2,089	16,179	6,665	3,696
1892.....	1,484	19,761	1,464	17,782	6,492	3,282
1893.....	1,682	20,987	3,552	17,762	5,606	3,798
1894.....	1,918	24,426	3,029	14,433	2,223	4,160
1895.....	1,770	22,834	2,172	14,569	7,775	3,609
1896.....	1,862	26,561	2,049	16,287	11,913	3,721
1897.....	1,521	25,547	1,827	16,318	11,231	2,903
1898.....		22,217	1,813	17,661	15,478	3,829
1899.....		27,476	1,759	21,454	22,343	5,973
1900.....		34,382	1,546	19,312	25,615	5,604
1901.....		39,068	5,762	16,311	22,190	5,516
1902.....		40,838	2,559	14,476	23,892	7,254
1903.....		53,388	586	18,058	22,177	6,152
1904.....		46,039	35	21,626	29,273	6,537
1905.....		49,747	2,607	21,980	33,250	8,447
1906.....		59,627	2,661	21,781	42,080	9,053
1907 (9 months).....		40,780	245	20,498	41,086	5,745
1908.....		65,125	3,396	26,159	57,760	8,917

a Emery in bulk, crushed or ground. Duty free.

b Emery and carborundum wheels and manufactures of emery or carborundum.

(c) Burrstones in blocks, rough or unmanufactured, not bound up or prepared by binding into mill-stones.

(d) Pumice and pumice stone, ground or unground. Duty free.

TRIPOLITE.

No shipments of tripolite during 1906 were reported. During the past two years small shipments were made from St. Anns, Cape Breton, by the Premier Tripolite Company of New York.

Statistics of shipments since 1896 are shown following.

ABRASIVE MATERIALS.—TABLE 8.

Annual Shipments of Tripolite.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1896.....	644	9,960	1903.....	835	16,700
1897.....	15	150	1904.....	320	6,400
1898.....	1,017	16,660	1905.....	200	3,600
1899.....	1,000	15,000	1906.....	Nil.	Nil.
1900.....	336	1,950	1907.....	30	225
1901.....	850	15,300	1908.....	30	195
1902.....	1,052	16,470			

ASBESTOS.

Asbestos is mined in Canada in the Eastern townships, Province of Quebec, at Black Lake, Thetford, East Broughton, and Danville. Other occurrences of the mineral have been noted, and some shipments were at one time made from the township of Denholm, in the county of Wright, north of the city of Ottawa, but the first-mentioned districts are the only localities in which mining is at present being carried on. The mining of asbestos in this region dates from about 1878, and statistics of production since 1880 are shown in tables following. The value of the annual output has grown from less than \$25,000 in 1880 to over \$2,573,000 in 1908, so that next to coal this is now one of the most important of non-metallic mineral products, and supplies a very large proportion of the world's demand. A special report on this subject has been published by this Branch, though now unfortunately out of print. A revised edition is, however, in course of preparation.

PRODUCTION.

A portion of the output is sufficiently high grade to be shipped as crude; the greater part, however, is crushed and the fibre extracted by special machinery. A uniform system of classification has not yet been adopted by the operating companies, but for statistical purposes the shipments have been classified on a valuation basis, the crude being divided into two classes and the mill fibre into three grades; the short fibred, asbestic, and sand, being separately classified.

The total shipments in 1908 aggregated 90,773 tons valued at \$2,573,335, as compared with shipments in 1907 of 90,426 tons valued at \$2,505,042, the shipments in 1908 being the largest both in tonnage and value yet recorded. Details are given in Table 1.

ASBESTOS.—TABLE 1.

Production by Classes, Calendar Years 1907 and 1908.

	1907.			1908.		
	Short Tons.	Value.	Per ton.	Short Tons.	Value.	Per ton.
		\$	\$ cts.		\$	\$ cts.
Crude, No. 1.....	1,419	374,275	263 76	857½	257,752	300 59
" 2.....	2,908	456,357	156 93	2,488½	411,480	165 38
Mill stock, No. 1.....	3,675	300,925	81 88	5,282½	425,448	80 54
" " 2.....	43,821	1,247,078	28 46	45,545½	1,345,750	29 33
" " 3.....	10,307	106,132	10 30	12,374½	114,931	9 29
Total asbestos.....	62,130	2,484,767	39 99	66,548	2,555,361	38 40
Total asbestic.....	28,296	20,275	0 72	24,225	17,974	0 74
Grand total.....	90,426	2,505,042	.....	90,773	2,573,335	.....

While the average prices in each class are given in the above, the classification is based approximately on the following maximum and minimum prices per ton:—

Range of Prices of Asbestos During the Years 1907-8.

	1907.		1908.	
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Crude, No. 1.....	225 00	to 300 00	267 00	to 350 00
" 2.....	100 00	" 200 00	75 00	" 225 00
Mill stock, No. 1.....	57 00	" 163 00	60 00	" 100 00
" " 2.....	18 00	" 50 00	20 00	" 50 00
" " 3.....	8 00	" 15 00	5 00	" 13 00
Asbestic.....	0 50	" 2 00	0 35	" 1 16

Although the total tonnage shipped in 1908 was only 347 tons in excess of the 1907 shipments, it will be seen that the amount of crude shipped in 1908, despite a higher average price, was less than the 1907 crude shipments by 981 tons. The fibre shipments on the other hand were 5,399 greater in 1908, and brought a higher average return per ton of \$1.22. The asbestic shipments in 1908 were 4,071 less than in 1907.

In Table 2, following, the production of crude asbestos and mill stock since 1903 is separately shown. The statistics indicate that during the past six years there has been only a slight increase in the quantity shipped as crude, although the average price has nearly doubled; while on the other hand the shipments of mill stock have increased over 125 per cent in the same time, with an increase of over 50 per cent in the average price per ton obtained.

ASBESTOS.—TABLE 2.

Annual Production of Crude and Mill Stock 1903-1908.

Calendar Year.	CRUDE.			MILL STOCK.		
	Short Tons.	Value.	Per ton.	Short Tons.	Value.	Per ton.
		\$	\$ cts.		\$	\$ cts.
1903.....	3,134	361,867	115 46	27,995	554,021	19 79
1904.....	4,410	534,874	121 28	31,201	678,628	21 75
1905.....	3,767	472,859	125 53	46,902	1,013,500	21 61
1906.....	3,841	635,345	165 41	56,920	1,401,083	24 61
1907.....	4,327	830,632	191 97	57,803	1,654,135	28 62
1908.....	3,345½	669,232	200 04	63,202	1,886,129	29 84

Table 3 shows the total shipments of asbestos and asbestic separately for each year since 1880.

ASBESTOS.—TABLE 3.

Annual Production since 1880.

Calendar Year.	ASBESTOS.			ASBESTIC.		
	Short Tons.	Value.	Per ton.	Short Tons.	Value.	Per ton.
		\$	\$ cts.		\$	\$ cts.
1880 (a).....	380	24,700	65 00			
1881 (a).....	540	35,100	65 00			
1882 (a).....	810	52,650	65 00			
1883 (a).....	955	68,750	71 99			
1884 (a).....	1,141	75,097	65 82			
1885 (a).....	2,440	142,441	58 38			
1886 (a).....	3,458	206,251	59 64			
1887.....	4,619	226,976	48 92			
1888.....	4,404	255,007	57 90			
1889.....	6,113	426,554	69 78			
1890.....	9,860	1,260,240	127 81			
1891.....	9,279	999,878	107 76			
1892.....	6,082	390,462	64 20			
1893.....	6,331	310,156	86 81			
1894.....	7,630	420,825	55 15			
1895.....	8,756	368,175	42 05			
1896.....	10,892	423,066	38 84	1,358	6,790	5 00
1897.....	13,202	399,528	29 99	17,240	45,840	2 66
1898.....	16,124	475,131	29 47	7,661	16,066	2 10
1899.....	17,790	468,635	26 34	7,746	17,214	2 22
1900.....	21,621	729,886	33 76	7,520	18,545	2 47
1901.....	32,892	1,248,645	37 96	7,325	11,114	1 52
1902.....	30,219	1,126,688	37 28	10,197	21,631	2 20
1903.....	31,129	915,888	29 42	10,548	13,869	1 31
1904.....	35,611	1,213,502	34 08	12,854	12,850	1 00
1905.....	50,669	1,486,359	29 33	17,594	16,900	0 96
1906.....	60,761	2,036,428	33 52	21,424	23,715	1 11
1907.....	62,130	2,484,767	39 99	28,296	20,275	0 72
1908.....	66,548	2,555,361	38 40	24,225	17,974	0 74

(a) Figures of export taken as production.

EXPORTS AND IMPORTS.

Supplying as it does the greater part of the world's demand, the Canadian output of asbestos finds a wide distribution.

During the twelve months ending March 31, 1908, exports were made as follows:—

Countries.	Tons.	Value.	Countries.	Tons.	Value.
		\$			\$
Great Britain.....	5,347	237,152	Italy.....	814	21,678
Belgium.....	3,372	86,871	Japan.....	97	3,177
France.....	2,332	50,612	United States.....	46,846	1,322,890
Germany.....	225	8,195	Total.....	59,033	1,730,575

Exports to Great Britain, United States, Germany and other countries during the past six calendar years are shown in Table 4, and total exports each year since 1892 in Table 5.

ASBESTOS.—TABLE 4.

Exports of Canadian Asbestos by Countries, 1903-1908.

Calendar Year.	TO GREAT BRITAIN.		TO UNITED STATES.		TO GERMANY.		TO OTHER COUNTRIES.		TOTAL EXPORTS.		Average per ton.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	
		\$		\$		\$		\$		\$	\$ cts.
1903..	2,743	40,120	24,252	714,781	1,429	25,150	3,356	110,982	31,780	891,033	28 04
1904..	6,602	210,175	25,957	762,300	2,463	94,141	2,250	94,271	37,272	1,160,887	31 15
1905..	9,731	305,056	29,696	811,080	2,969	100,061	4,635	169,918	47,031	1,386,115	29 47
1906..	9,435	318,313	39,767	1,058,513	3,654	82,117	6,998	230,314	59,854	1,689,257	28 22
1907..	5,432	200,909	44,861	1,312,582	225	8,195	6,235	147,613	56,753	1,669,299	29 41
1908..	5,221	288,290	50,503	1,314,337	341	9,470	5,145	230,666	61,210	1,842,763	30 11

ASBESTOS.—TABLE 5.

Annual Exports, Calendar Years 1892-1908.

Calendar Year.	Tons.	Value.	Value per ton.	Calendar Year.	Tons.	Value.	Value per ton.
		\$	\$ cts.			\$	\$ cts.
1892.....	5,380	373,103	69 35	1901.....	32,269	1,069,918	33 16
1893.....	5,917	338,707	57 24	1902.....	31,074	995,071	32 02
1894.....	7,987	477,837	59 82	1903.....	31,780	891,033	28 04
1895.....	7,442	421,690	56 66	1904.....	37,272	1,160,887	31 14
1896.....	11,842	567,967	47 96	1905.....	47,031	1,386,115	29 47
1897.....	15,570	473,274	30 40	1906.....	59,854	1,689,257	28 22
1898.....	15,346	494,012	32 19	1907.....	56,753	1,669,299	29 41
1899.....	17,883	473,148	26 46	1908.....	61,210	1,842,763	30 11
1900.....	16,993	693,105	39 61				

Although the chief source for the raw material, Canada does not as yet manufacture all the asbestos goods required for home consumption. There is, therefore, a considerable importation of asbestos goods under the import classification 'Asbestos in any form other than crude and all manufactures of,' the duty being 25 per cent. The annual value of the imports is shown in Table 6.

ASBESTOS.—TABLE 6.
Imports Fiscal Years 1885-1908.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1885.....	674	1893.....	19,181	1901.....	50,829
1886.....	6,831	1894.....	20,021	1902.....	52,464
1887.....	7,836	1895.....	26,094	1903.....	75,465
1888.....	8,793	1896.....	23,900	1904.....	83,827
1889.....	9,943	1897.....	19,032	1905.....	116,836
1890.....	13,250	1898.....	26,389	1906.....	137,974
1891.....	13,298	1899.....	32,607	1907 (9 months) ..	127,509
1892.....	14,090	1900.....	43,455	*1908.....	190,980

* Asbestos in any form other than crude, and all manufactures of. Duty 25 per cent.

Outside of Canada the chief asbestos producing country is Russia, the output from which in 1907 is reported as 9,352 metric tons. The United States, Cape Colony, and Cyprus are also producers, though the quantity is not important.

Table 7 shows the principal productions since 1902.

ASBESTOS.—TABLE 7.
World's Production 1902-1908 in Metric Tons, (2204.6 lbs.).

—	1902.	1903.	1904.	1905.	1906.	1907.	1908.
Canada (b).....	27,414	28,240	32,306	45,967	55,122	56,364	60,372
United States (c)....	912	805	1,343	2,820	1,538	592	849
Russia (e).....	4,507	5,624	7,502	7,266	9,201	(a) 9,356	*
Cape Colony (e)	(g) 41	(g) 276	373	454	473	548	*
Cyprus (e).....					(g) 19	(g) 89	*

* Figures not available.

(a) Provisional. (b) Mines Branch, Ottawa.

(c) Home Office, London.

(g) Exported.

(c) United States, Geological Survey.

The following is a list of the principal producing companies in Canada:—

List of Operators.

Dominion Asbestos Co., Ltd., Montreal, 415 Merchants Bank Building.
 Standard Asbestos Co., Ltd., " 415 " "
 Union Asbestos Mines, Calmon, Que.
 Johnston's Asbestos Co., Ltd., Thetford Mines, Que.
 Bell Asbestos Mines, " "
 Beaver Asbestos Co., " "
 King Asbestos Mines " - "
 The Asbestos and Asbestic Co., Ltd., Asbestos, Que.
 Broughton Asbestos Fibre Co., East Broughton Sta., Que.
 The Quebec Asbestos Co., Sherbrooke, Que.
 Eastern Townships Asbestos Co., East Broughton Sta., Que.
 The Frontenac Asbestos Mining Co., Ltd., East Broughton Sta., Que.
 British Canadian Asbestos Co., Ltd., Black Lake, Que.

COMPANIES PROSPECTING OR EXPECTING TO OPERATE.

Megantic Mining Co., Montreal, 88 McGill St.
 W. H. Lambly, Inverness, Que.
 Brompton Lake Asbestos Co., Montreal, 17 Victoria Square.
 The Asbestos Mining & Manufacturing Co., Sherbrooke, Que.
 Boston Asbestos Co., Ltd., East Broughton Sta., Que.
 Robertson Asbestos Mining Co., Drummondville, Que.
 The Ling Asbestos Co., East Broughton Sta., Que.
 The Thetford Asbestos & Exploration Co., Thetford, Que.
 The Imperial Asbestos Co., Montreal, Que.
 La Compagnie d'Amiante Champlain, 81 Rue St. Pierre, Que.
 The B and A Asbestos Co., Robertsonville, Que.
 The Berlin Asbestos Co., Robertson Sta., Que.

CHROMITE.

With regard to the output of chromite in Canada during the past four years, the production has shown comparatively little variation.

The shipments in 1907 were 7,196 tons valued at \$72,901, made up of 3,545 tons classed as high grade valued at \$41,931 (chiefly concentrates), and 3,651 tons of low grade, valued at \$30,970.

In 1908 the total shipments were returned as 7,225 tons valued at \$82,008, made up of 3,472 tons of concentrates valued at \$45,300, and 3,753 tons of crude ore, valued at \$36,708.

In neither of these years was the output as large as in 1906, when the shipments were given as 9,035 tons valued at \$91,859.

Prices realized in 1908 were perhaps slightly better than in 1907.

Statistics of production since 1886 are shown in Table 1 following, the total during the last six years being divided into high and low grade. Material classed as high grade includes both ore and concentrates ranging from 48 per cent to 50 per cent Cr_2O_3 and higher, while the low grade is composed chiefly of crude ore.

CHROMITE.—TABLE 1.

Annual Production in Canada, 1886-1908.

Calendar Year.	HIGH GRADE			LOW GRADE.			TOTALS.		
	Short Tons.	Value.	Average Prices.	Short Tons.	Value.	Average Prices.	Short Tons.	Value.	Average Prices.
		\$	\$ cts.		\$	\$ cts.		\$	\$ cts.
1886							60	945	15 75
1887							38	570	15 00
1888 to							No Output {		
1893									
1894							1,000	20,000	20 00
1895							3,177	41,300	13 00
1896							2,342	27,004	11 53
1897							2,637	32,474	12 31
1898							2,021	24,252	12 00
1899							2,010	21,842	10 86
1900							2,335	27,000	11 56
1901							1,274	16,744	13 14
1902							900	13,000	14 44
1903	2,842	44,280	15 58	667	6,849	10 27	3,509	51,129	14 57
1904	4,650	53,976	16 08	1,424	13,170	9 25	6,074	67,146	11 05
1905				8,575	93,301	10 88	8,575	93,301	10 88
1906	4,975	57,484	11 55	4,060	34,375	8 47	9,035	91,859	10 17
1907	3,545	41,931	11 83	3,651	30,970	8 48	7,196	72,901	10 13
1908	3,472	45,300	13 05	3,753	36,708	9 78	7,225	82,008	11 35

The chromite finds its chief market in the United States, although a few car-loads are shipped annually to Canadian points.

The exports of chromite from Canada, as compiled from the monthly reports of Trade and Navigation, are given in Table 2. It must be pointed out, however, that these figures show some peculiar discrepancies. In the first place the exports to Great Britain are evidently not chromite, but may be ferro-chrome, while in the second place the quantities given as exported to the United States are much less than is stated by the shippers to have found a market in that country.

CHROMITE.—TABLE 2.

Exports during the calendar years 1895-1908.

Calendar Year.	To GREAT BRITAIN.		To UNITED STATES.		To OTHER COUNTRIES.		TOTAL EXPORTS.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
1895.....		\$		\$		\$		\$
1896.....							2,908	42,236
1897.....							2,466	31,411
1898.....							2,106	26,254
1899.....							1,683	20,783
1900.....							1,509	19,876
1901.....							368	8,259
1902.....							2,259	25,444
1903.....	62	4,650	914	15,319	37	555	740	7,535
1904.....	192	11,395	2,859	45,649	287	3,292	1,013	20,524
1905.....	153	11,030	1,966	23,362			3,338	60,336
1906.....			891	10,188			2,119	34,392
1907.....	108	10,400	784	9,400			891	10,188
1908.....			4,571	56,864			892	19,800
							4,571	56,864

It will be observed that the exports to Great Britain average in value from \$60 to \$96 per ton, while those to the United States range between \$11 and \$16 per ton, and it may be inferred that the exports to Great Britain possibly represent ferro-chrome which may have been entered with the chromite by the Customs officers in the absence of a more definite classification.

In the following table a comparison is given of the trade returns in chromite between Canada and the United States, as published by the Canadian Customs Department and the United States Department of Commerce respectively, in order to further illustrate the discrepancies referred to in Table 2.

TWELVE MONTHS ENDING JUNE 30.	IMPORTS OF CHROMITE INTO THE UNITED STATES FROM CANADA ¹ .		EXPORTS OF CHROMITE FROM CAN- ADA TO THE UNITED STATES ² .	
	Short Tons.	Value.	Short Tons.	Value.
		\$		\$
1904.....	2,790	36,322	2,032	40,298
1905.....	6,489	70,934	2,635	31,007
1906.....	9,951	107,580	1,808	21,293
1907.....	6,179	66,115	612	7,606
1908.....	6,505	69,009	2,654	32,940

¹ The Foreign Commerce and Navigation of the United States, Washington, long ton in original changed to short ton.

² Monthly Reports, Trade and Navigation, Ottawa.

We are forced to the conclusion that a larger quantity of chromite, particularly during the years 1904 to 1908, has been exported to the United States than is shown by the Canadian trade returns.

The chromite is mined in the Eastern townships, Province of Quebec, chiefly in the township of Coleraine at Little Lake St. Francis and Black Lake, the operating companies being the Dominion Chrome Company and the Black Lake Chrome and Asbestos Company, both operating under one management. A couple of car loads were also shipped by the D'Israeli Chrome Mines, Ltd., from the property of Mr. J. O. Brousseau, in Garthby township.

Other mines in the district, owned by the American Chrome Company and the Canadian Chrome Company, were idle during the year.

Chrome iron ore is chiefly used for the manufacture of ferro-chrome alloys, and chromium salts for pigments, and is also used for linings in steel and copper furnaces. Ferro-chrome is manufactured at Buckingham, Que., by the Electric Reduction Company, from Eastern Township ores, and shipments of these ores have also been made to the steel furnaces at Sydney and Sault Ste. Marie.

Prices in New York in 1907 and 1908 were practically uniform, ranging from \$17 to \$20 per long ton for 50 per cent ore.

As an illustration of the possible market in the United States for Canadian chrome iron ore, the following table shows the imports into that country during the year ending June 30, 1908.

CHROMITE.—TABLE 3.

Imports into the United States, year ending June 30, 1908,
in tons of 2,240 lbs.*

Imports from	Long Tons.	Value.	Average Value per Ton.
Belgium.....	197	\$ 2,492	\$ 12 65
France.....	468	7,776	16 39
Germany.....		20	
Greece.....	9,921	136,996	13 81
United Kingdom.....	4,336	57,719	13 31
Canada.....	5,808	69,009	11 88
India.....	35	357	10 20
Turkey in Asia.....	439	5,312	12 10
French Oceania.....	20,458	221,460	10 82
Portuguese Africa.....	2,200	32,600	14 82
Totals.....	43,862	533,600	12 17

* The Foreign Commerce and Navigation of the United States, 1908.

THE WORLD'S PRODUCTION.

The world's production of chromite in 1907 was probably between 90,000 and 100,000 metric tons as a minimum. Turkey has been a large producer of this mineral, but only incomplete records of exports are available. The following table contains a summary of available records of chromite supplies from 1903 to 1908.

CHROMITE.—TABLE 4.

World's Production of Chromite in metric tons (2,204·6 lbs.).

Locality.	1903	1904	1905	1906	1907	1908
Australia (a)	1,982	403	53	15	30	...
Bosnia and Herzegovina (a).....	147	278	186	320	310	*
Canada (d).....	3,183	5,510	7,779	8,196	6,528	6,554
Greece (a).....	8,478	6,530	8,900	11,530	11,730	*
India (a).....			2,751	4,445	7,391	*
New Caledonia (Production)	(a) 47,247	(a) 76,933	(b) 84,241	(b) 3,800		*
" (Exports).....	(b) 21,437	(b) 42,437	(b) 51,374	(a) 57,367	(c) 31,552	(c) 46,309
Rhodesia (a)		Nil.		3,308	7,273	(e) 12,118
Russia (a).....	16,421	26,575	27,047	16,976	*	*
Norway (a).....	Nil.	154	Nil.	Nil.		*
United States (f).....	152	125	22	109	295	(c) 284
Turkey (g).....	No complete statistics available.					

* Statistics not yet available.

(a) Home Office, London.

(b) L'Industrie Minière, Paris.

(c) Mineral Industry, New York, 1908.

(d) Department of Mines, Ottawa.

(e) Rhodesia "Chamber of Mines".

(f) Geological Survey, United States.

(g) Turkey is one of the most important producers of chromite, the ore being found in many parts of both European and Asiatic Turkey. Unfortunately no complete records of production are available. According to statistics collected and published by the Home Office, the exports from several ports during the years 1903 to 1907 were as follows, in metric tons:—

—	1903.	1904.	1905.	1906.	1907.
Salonica.....	9,000	8,00	5,700	5,600	4,900
Kossova.....		3,100	3,000	4,100	2,800
	12,000	12,000	12,000	13,000	12,000
Derendge and Marmora ports.....	to	to	to	to	to
	15,000	15,000	15,000		14,000
Smyrna.....	2,030	838		1,080	
Adana.....		To value of £500	£2,824		£1,000
Adalia.....					700

Imports of chrome iron ore into the United States from Turkey, during the fiscal years from 1903 to 1907 inclusive, aggregated 28,482 long tons, while the imports into Great Britain from Turkey during the six years from 1903 to 1907 inclusive, were 91,800 long tons.

COAL.

Ever since 1896, each year has shown a marked increase over the preceding one in the figures representing the annual tonnage of coal extracted from the Canadian mines, and not once has this growth suffered a set-back sufficient to show a decrease in the succeeding year. This is, of course, a natural consequence of Canada's development, not only industrially but also agriculturally, since the fuel for domestic uses in the prairie provinces is almost exclusively coal and lignite. As the growth of a country can be closely gauged by the increase in the production and consumption of coal, it may be interesting to point out that in 1874, which is about the earliest year for which we have a comparatively reliable record, the production of coal in Canada was 1,063,742 tons; it took twelve years of growth to double this annual production, and in 1886, 2,116,653 tons were recorded; this latter figure took another twelve years to double, and in 1898, 4,173,108 tons were produced; but at this point the rate of increase grows considerably, and six years later, in 1904, the 1898 figure of production was doubled and 8,254,595 tons were recorded. Four years later, in 1908, the increase is approximately 2,250,000 tons, showing a rate which is rather lower than for the previous few years, but if we consider that both 1907 and 1908 were unfavourable to the coal industry, it is not unlikely that in two or three years from now the annual production may be double that of 1904.

It is, moreover, to be noticed that the value of the production of *coal alone* in 1908 exceeded by nearly \$3,000,000 the value of the *total mineral production* of Canada during the year 1896.

In 1907, during the first part of the year, great activity prevailed in coal mining throughout the whole of Canada, but towards the latter part of that year, as well as the greater part of 1908, several causes contributed to a decrease in the operations of the collieries, among which were the financial and industrial depression which marked that period throughout America; labour troubles in the collieries which resulted in a decreased output, and a severe winter which in the spring of 1907, especially in the western provinces, materially impeded the means of transportation and paralyzed traffic, giving rise in many cases to very serious shortages of fuel for industrial and domestic uses.

The coal mined in Canada comprises the three varieties, anthracite, bituminous, and lignite. The bituminous forms by far the largest proportion of the output, being mined exclusively in the Maritime provinces, in British Columbia, and in the Crowsnest Pass region of southwestern Alberta. It is, of course, difficult to draw any sharp lines of demarcation between the different varieties

of coal, as the produce of some mines might be equally well placed in one or the other of the classes according to the classification adopted; but roughly speaking we may say that out of 11,000,000 tons produced in Canada in 1908, about 10,000,000 tons may be classified as being bituminous.

Only one mine works an anthracite coal seam. This is at Bankhead, near Banff, Alberta; but the output of this mine is larger than that of any one of the lignite mines of the Province.

In the past, the anthracite and the lignite which are produced exclusively in Alberta and Saskatchewan, had been used mainly for domestic purposes; but lately the Alberta anthracite has entered the industrial field and is now used to some extent in gas producers. It is very probable that lignite will before long also be used industrially in the same way, as experiments conducted by the governments of both the United States and Canada show that it can very advantageously be used in this manner.

Table 1 shows that the production of coal in Canada in 1907 was 10,511,426 short tons, valued at \$24,381,842; and in 1908 it reached 10,886,311 tons, valued at \$25,194,573; these values being at the pit mouth. The production of 1907 shows an increase of 748,825 tons, or 7.67 per cent as compared with 1906. The increase in 1908 as compared with 1907 was lower, being only 374,885 tons, or 3.5 per cent; but considering the adverse industrial conditions which prevailed during the early part of 1908 these figures are still very gratifying.

It may be mentioned that in this report the word production applies to the amount of coal which is actually used, or sold by the producers, in contradistinction to output, which applies to the coal extracted from the mine. Some of this output goes to the stock on hand at the end of the year, and is taken into account in the following year's production.

COAL.—TABLE 1.

Production by Provinces, 1906-7-8, in tons of 2,000 lbs.

Province.	1906.		1907.		1908.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Nova Scotia	6,220,505	\$11,108,044	6,354,133	\$12,764,999	6,652,539	\$13,364,476
British Columbia....	2,146,262	5,748,915	2,364,898	7,390,306	2,333,708	7,292,838
Alberta	1,246,360	2,614,762	1,591,579	3,836,286	1,685,661	4,127,311
Saskatchewan	108,398	164,146	151,232	252,437	150,556	253,790
New Brunswick.	34,076	68,152	34,584	77,814	60,000	135,000
Yukon Territory....	7,000	23,000	15,000	60,000	3,847	21,158
Totals	9,762,601	19,732,019	10,511,426	24,381,842	10,886,311	25,194,573

Table 2 gives comparisons of the coal production of the various provinces during the last three years, with increases and decreases in tons and percentages.

COAL.—TABLE 2.

Comparison of Production 1906 with 1907, and 1907 with 1908.

Province.	(i) INCREASE OR (d) DECREASE.			
	Years 1906 and 1907.		Years 1907 and 1908.	
	Tons.	Per cent.	Tons.	Per cent.
Nova Scotia.....	(i) 133,628	2·15	(i) 298,406	4·70
British Columbia.....	(i) 218,636	10·19	(d) 31,190	1·32
Alberta.....	(i) 345,219	27·70	(i) 94,082	5·91
Saskatchewan.....	(i) 42,834	39·52	(d) 676	0·01
New Brunswick.....	(i) 508	1·49	(i) 25,416	73·49
Yukon Territory.....	(i) 8,000	114·29	(d) 11,153	74·35
Totals for Canada.....	(i) 748,825	7·67	(i) 374,885	3·56

Table 3 gives the annual production of coal of Canada, with comparisons showing increases or decreases each year as compared with the preceding year.

COAL.—TABLE 3.

Annual Production showing the Increase or Decrease each year.

Year.	Tons.	Value.	Average Value per Ton.	Increase (i) or Decrease (d) in Tonnage.	Increase (i) or Decrease (d) per cent.
		\$	\$		
1785 to 1873.....	*8,534,455				
1874.....	1,063,742	1,763,423	1 66		
1875.....	1,039,974	1,747,016	1 68	(d) 23,768	(d) 2·2
1876.....	994,762	1,729,546	1 74	(d) 45,212	(d) 4·3
1877.....	1,036,670	1,794,415	1 73	(i) 41,908	(i) 4·2
1878.....	1,089,744	1,941,285	1 78	(i) 53,074	(i) 5·1
1879.....	1,126,497	2,050,639	1 82	(i) 36,733	(i) 3·4
1880.....	1,482,714	2,657,194	1 79	(i) 356,217	(i) 31·6
1881.....	1,537,106	2,688,621	1 75	(i) 54,392	(i) 3·7
1882.....	1,848,148	3,243,446	1 76	(i) 311,042	(i) 20·2
1883.....	1,818,684	3,109,635	1 71	(d) 29,464	(d) 1·6
1884.....	1,984,959	3,593,831	1 81	(i) 166,275	(i) 9·1
1885.....	1,920,977	3,417,807	1 78	(d) 63,982	(d) 3·2
1886.....	2,116,653	3,739,840	1 77	(i) 195,676	(i) 10·2
1887.....	2,429,330	4,388,206	1 81	(i) 312,677	(i) 14·8
1888.....	2,602,552	4,674,140	1 80	(i) 173,222	(i) 7·1
1889.....	2,658,303	4,894,287	1 84	(i) 55,751	(i) 2·1
1890.....	3,084,682	5,676,247	1 84	(i) 426,379	(i) 16·0
1891.....	3,577,749	7,019,425	1 96	(i) 493,067	(i) 16·0
1892.....	3,287,745	6,363,757	1 94	(d) 290,004	(d) 8·1
1893.....	3,783,499	7,359,080	1 95	(i) 495,754	(i) 15·1
1894.....	3,847,070	7,429,468	1 93	(i) 63,571	(i) 1·7
1895.....	3,478,344	6,739,153	1 94	(d) 368,726	(d) 9·6
1896.....	3,745,716	7,226,462	1 93	(i) 267,372	(i) 7·7
1897.....	3,786,107	7,303,597	1 93	(i) 40,391	(i) 1·1
1898.....	4,173,108	8,224,288	1 97	(i) 387,001	(i) 10·2
1899.....	4,925,051	10,283,497	2 09	(i) 751,943	(i) 18·0
1900.....	5,777,319	13,742,178	2 38	(i) 852,268	(i) 17·3
1901.....	6,486,325	12,699,243	1 96	(i) 709,006	(i) 12·3
1902.....	7,466,681	15,210,877	2 04	(i) 780,356	(i) 15·1
1903.....	7,960,364	15,942,833	2 00	(i) 493,683	(i) 6·6
1904.....	8,254,595	16,592,231	2 01	(i) 294,231	(i) 3·7
1905.....	8,667,948	17,520,263	2 02	(i) 413,353	(i) 5·0
1906.....	9,762,601	19,732,019	2 02	(i) 1,094,653	(i) 12·6
1907.....	10,511,426	24,381,842	2 32	(i) 748,825	(i) 7·7
1908.....	10,886,311	25,194,573	2 32	(i) 374,885	(i) 3·5

* The total production for the years 1785 to 1873 is made up as follows :—

Nova Scotia 1785 to 1873.....8,053,670 tons of 2,000 pounds
 British Columbia 1836 to 1873..... 480,785 " " " "

The following table shows the proportionate contribution of each province to the grand total of the coal production of Canada at various times between the years 1874 and 1899, and yearly between 1899 and 1908.

Province.	1874.	1890.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.
Nova Scotia	%	%	%	%	%	%	%	%	%	%	%	%
New Brunswick.....	91	71	64.2	62.9	64.4	69.4	71.3	68.0	65.5	64.07	60.79	61.40
*Saskatchewan.....				0.7	0.7	0.9	1.5	1.5	1.2	1.11	1.44	1.37
*Alberta.....		4	6.8	5.4	5.2	5.4	6.2	8.0	10.8	12.77	15.14	15.42
British Columbia.....	8	25	29.0	31.0	29.6	24.2	21.0	22.5	22.4	21.98	22.50	21.77
Yukon Territory.....					0.1	0.1	0.0		0.1	0.07	0.13	0.04

* Alberta and Saskatchewan were established as provinces on September 1, 1905. For the purpose of comparison, the coal production during the years previous to that date has been separated according to the present boundaries of these provinces.

The figures of the above table bring out the steady development of the coal industry in the prairie Provinces of Alberta and Saskatchewan. In 1900 these two Provinces were only contributing a little over 6 per cent, whereas in 1908 their aggregate production represents 16.79 per cent of the total production of Canada.

The following tables give the statistics of exports of coal from Canada, taken from the Trade and Navigation Report. The United States constitutes the main market for coal exported, as 80 per cent of it was sent to that country. The exports of coal from Canada to the United States are made from Nova Scotia and British Columbia, each of these Provinces contributing about an equal share.

Exports of Coal produced in Canada during 1906-7-8.

Exported to	1906.		1907.		1908.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
Great Britain.....	4,390	13,719	8,514	25,106	5,557	18,065
United States.....	1,587,249	4,104,676	1,691,016	4,278,870	1,385,223	3,564,390
Newfoundland.....	170,032	391,987	131,784	357,005	194,034	532,121
Other countries.....	73,370	228,115	62,760	218,583	145,019	546,801
Totals.....	1,835,041	4,738,497	1,894,074	4,879,564	1,729,833	4,661,377

COAL.—TABLE 4.

Exports.

CALENDAR YEAR.	PRODUCE OF CANADA.	NOT THE PRODUCE OF CANADA.	CALENDAR YEAR.	PRODUCE OF CANADA.	NOT THE PRODUCE OF CANADA.
	Tons.	Tons.		Tons.	Tons.
1873.....	420,683	5,403	1891.....	971,259	77,827
1874.....	310,988	12,859	1892.....	823,733	93,988
1875.....	250,348	14,026	1893.....	960,312	102,827
1876.....	248,638	4,995	1894.....	1,103,694	89,786
1877.....	301,317	4,829	1895.....	1,011,235	96,836
1878.....	327,959	5,468	1896.....	1,106,661	116,774
1879.....	306,648	8,468	1897.....	986,130	101,848
1880.....	432,188	14,217	1898.....	1,150,029	99,189
1881.....	395,382	14,245	1899.....	1,293,169	101,004
1882.....	412,682	37,576	1900.....	1,787,777	62,776
1883.....	486,811	44,388	1901.....	1,573,661	53,894
1884.....	474,405	62,665	1902.....	2,090,268	23,453
1885.....	427,937	71,003	1903.....	1,954,629	27,138
1886.....	520,703	78,443	1904.....	1,557,412	27,308
1887.....	580,965	89,098	1905.....	1,635,287	86,792
1888.....	588,627	84,316	1906.....	1,835,041	44,758
1889.....	665,315	89,294	1907.....	1,894,074	101,778
1890.....	724,486	82,534	1908.....	1,729,833	102,071

COAL.—TABLE 5.

Exports: Nova Scotia and British Columbia.

Calendar Year.	NOVA SCOTIA.		*BRITISH COLUMBIA.	
	Tons.	Value.	Tons.	Value.
		\$		\$
1874	252,124	647,539	51,001	278,180
1875	179,626	404,351	65,842	356,018
1876	126,520	263,543	116,910	627,754
1877	173,389	352,453	118,252	590,263
1878	154,114	293,795	165,734	698,870
1879	113,742	203,407	146,094	608,845
1880	199,552	344,148	219,878	775,008
1881	193,081	311,721	187,791	622,965
1882	216,954	390,121	179,552	628,437
1883	192,795	336,088	271,214	946,271
1884	222,709	430,330	245,478	901,440
1885	176,287	349,650	250,191	1,000,764
1886	240,459	441,693	274,466	960,649
1887	207,941	390,738	356,657	1,262,552
1888	165,863	330,115	405,071	1,605,650
1889	186,608	396,830	470,683	1,918,263
1890	202,387	426,070	503,882	1,977,191
1891	194,867	417,816	767,734	2,958,695
1892	181,547	407,980	599,716	2,317,734
1893	203,198	470,695	708,228	2,693,747
1894	310,277	633,398	770,439	2,855,216
1895	241,091	534,479	728,283	2,692,562
1896	380,149	787,270	679,799	2,507,752
1897	307,128	642,754	630,341	2,221,737
1898	309,158	629,363	813,843	2,948,428
1899†	459,260	827,941	781,809	2,947,369

* See foot-note, Table 16. † Since 1899, exports by provinces have not been published in Trade and Navigation report.

The following tabulation shows the disposal of the coal mined in Canada during the years 1907 and 1908, as compiled from the returns received from the producers:—

Distribution of Coal mined in Canada during the years 1907-8.

	1907.	1908.
Sales in Canada	7,358,135	7,715,203
Sales for export to United States	1,514,182	1,218,656
" " other countries	129,957	297,291
Total sales	9,002,274	9,231,150
Used by producers for the manufacture of coke	751,967	708,674
" " colliery consumption and workmen	757,185	946,487
Stock on hand January 1	212,559	183,443
" " December 31	190,224	230,335
Difference	- 22,335	+ 46,892
Loss due to washing, breakage or other causes	351,783	157,610
Total output	10,840,874	11,090,813

The imports of coal into Canada are given in Table 6. The coal dust column comprises the bituminous coal which goes through a $\frac{3}{4}$ " mesh screen.

COAL—TABLE 6.

Imports of Coal into Canada.

BITUMINOUS COAL.			ANTHRACITE COAL AND ANTHRACITE DUST.		BITUMINOUS COAL DUST.	
Fiscal Year.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
1880.....	457,049	1,220,761	516,729	1,509,960	3,565	8,877
1881.....	587,024	1,741,568	572,092	2,325,937	337	866
1882.....	636,374	1,992,081	638,273	2,666,356	471	900
1883.....	911,629	2,996,198	754,891	3,344,936	8,154	10,082
1884.....	1,118,615	3,613,470	868,000	3,831,283	12,782	14,600
1885.....	1,011,875	3,197,539	910,324	3,909,844	20,185	20,412
1886.....	930,949	2,591,554	995,425	4,028,050	36,230	36,996
1887.....	1,149,792	3,126,225	1,100,165	4,423,062	31,401	33,178
1888.....	1,231,234	3,451,661	*2,138,627	5,291,875	28,808	34,730
1889.....	1,248,540	3,255,171	1,291,705	5,199,481	39,980	47,139
1890.....	1,409,282	3,528,959	1,201,335	4,595,727	53,104	29,818
1891.....	1,598,855	4,060,896	1,399,067	5,224,452	60,127	36,139
1892.....	1,615,220	4,099,221	1,479,106	5,640,346	82,091	39,840
1893.....	1,603,154	3,967,764	1,500,550	6,355,285	109,585	44,474
1894.....	1,359,509	3,315,094	1,530,522	6,354,040	117,573	49,510
1895.....	1,444,928	3,321,387	1,404,342	5,350,627	181,318	52,221
1896.....	1,538,489	3,299,025	1,574,355	5,667,096	210,386	53,742
1897.....	1,543,476	3,254,217	1,457,295	5,695,168	225,562	59,609
1898.....	1,684,024	3,179,595	1,460,701	5,874,685	229,445	45,556
1899.....	2,171,358	3,691,946	1,745,460	6,490,509	276,547	44,717
1900.....	2,439,764	4,310,964	1,654,401	6,602,912	330,174	98,349
1901.....	2,516,392	4,956,025	1,933,283	7,923,950	414,432	275,559
1902.....	3,047,392	5,712,058	1,652,451	7,021,939	489,548	264,550
1903.....	3,511,412	7,776,717	1,456,713	7,028,664	550,883	420,317
1904.....	4,053,900	9,108,208	2,275,018	10,461,223	608,041	544,128
1905.....	4,176,274	8,002,896	2,604,137	12,093,371	650,261	343,456
1906 *.....	4,495,550	8,360,348	2,200,863	10,304,308	747,251	489,180
Calendar Year.	Bituminous round and run of mine.				Bituminous slack such as will pass through a $\frac{3}{4}$ " screen.	
1907.....	6,370,152	13,232,445	3,141,873	14,506,129	1,139,256	1,219,949
1908.....	(a) 6,025,574	12,516,748	(b) 3,160,110	14,478,536	(c) 1,111,811	1,355,677

(a). Duty, 53c. per ton. (b). Coal, anthracite, and anthracite coal dust; duty free. (c). Duty 20 per cent, not over 13c. per ton.

* In the anthracite column the imports show a very considerable increase in 1888 over 1887, an increase of over 94 per cent, the falling off again in 1889 being quite as remarkable. The average values per ton for the three years 1887, 1888, and 1889, were \$4.02, \$2.47 and \$4.03 respectively. Although a duty of 50c. per ton on anthracite coal was removed May 13, 1887, it is hardly thought this would account for the changes indicated, and unless some error may possibly have crept into the Trade and Navigation report, no explanation is available.

In 1908 the total consumption of coal in Canada amounted to 19,351,902 short tons, made up as follows: 9,156,478 tons of coal produced in Canada, and 10,195,424 tons of imported coal. According to these figures Canada produces only 47.3 per cent of the coal which it consumes. It must be noted, however,

that if all the coal mined in Canada had been used in the country, it would have constituted over 56 per cent of the consumption. In 1907 the figures were: total consumption, 19,166,855 tons, made up of 8,617,352 tons of Canadian coal, and 10,549,503 tons of imported coal, representing proportions of 45 per cent and 55 per cent respectively.

Consumption of Coal in Canada, 1907-8.

	1907.		1908.	
	Tons.	Tons.	Tons.	Tons.
Production, Table 3	10,511,426		10,886,311	
Exports of Canada, Table 4.	1,894,074		1,729,833	
Home consumption of Canadian coal.		8,617,352		9,156,478
Imports, Table 6	10,651,281		10,297,495	
Exports not produce of Canada, Table 4.	101,778		102,071	
Canadian consumption of imported coal.		10,549,503		10,195,424
Total consumption of coal in Canada.		19,166,855		19,351,902

The following table gives the statistics of the consumption of coal in Canada, and the respective proportions of imported coal and Canadian coal consumed in the country:—

COAL.—TABLE 7.

Consumption of Coal in Canada, 1886-1908.

Calendar Year.	Canadian.	Imported.	Total.	Percentage Canadian.	Percentage Imported.	Consumption per capita.
	Tons.	Tons.	Tons.			Tons.
1886.....	1,595,950	1,884,161	3,480,111	45·9	54·1	0·758
1887.....	1,848,365	2,192,260	4,040,625	45·7	54·3	0·871
1888.....	2,013,925	3,314,353	5,328,278	37·8	62·2	1·137
1889.....	1,992,988	2,490,931	4,483,919	44·4	55·6	0·946
1890.....	2,360,196	2,581,187	4,941,383	47·8	52·2	1·031
1891.....	2,606,490	2,980,222	5,586,712	46·7	53·3	1·153
1892.....	2,464,012	3,082,429	5,546,441	44·4	55·6	1·133
1893.....	2,823,187	3,110,462	5,933,649	47·6	52·4	1·198
1894.....	2,743,376	2,917,818	5,661,194	48·5	51·5	1·130
1895.....	2,467,109	2,933,752	5,400,861	45·7	54·3	1·066
1896.....	2,639,055	3,206,456	5,845,511	45·1	54·9	1·140
1897.....	2,799,977	3,124,485	5,924,462	47·3	52·7	1·143
1898.....	3,023,079	3,274,981	6,298,060	48·0	52·0	1·200
1899.....	3,631,882	4,092,361	7,724,243	47·0	53·0	1·454
1900.....	3,989,542	4,361,563	8,351,105	47·8	52·2	1·561
1901.....	4,912,664	4,810,213	9,722,877	50·5	49·5	1·810
1902.....	5,376,413	5,165,938	10,542,351	51·0	49·0	1·927
1903.....	6,005,735	5,491,870	11,507,605	52·2	47·8	2·055
1904.....	6,697,183	6,909,651	13,606,834	49·2	50·8	2·346
1905.....	7,032,661	7,343,880	14,376,541	48·9	51·1	2·396
1906.....	7,927,560	7,398,906	15,326,466	51·7	48·3	2·425
1907.....	8,617,352	10,549,503	19,166,855	45·0	55·0	2·946
1908.....	9,156,478	10,195,424	19,351,902	47·3	52·7	2·826

It is gratifying to note the very large increase in the consumption of coal per capita as shown in the last column of Table 7. From a little over three-quarters of a ton per year per head of the population in 1886, it had doubled to more than one and a half tons in 1900, and in 1907 it had reached the high figure of 2.946 tons.

It is interesting to note that the Mines Branch of the Department of Mines of Canada is at present conducting an important series of experiments on the coals and lignites of Canada. These tests are being carried on at McGill University on commercial samples of five to ten tons. They include boiler tests, gas producer tests, washing tests, coking tests, and very extensive series of analyses. It is expected that the report will be issued in the latter part of 1909.

Nova Scotia.

Tables 8, 9, 10, and 11, give the statistics of the coal industry in Nova Scotia. Table 8 shows that the coal production in 1908 was 6,652,539 tons valued at \$13,364,476, and that in the last few years there has been a steady increase in tonnage.

Table 9 gives the coal trade by countries. This brings out the fact that Cape Breton is responsible for over 72 per cent of the production of the Province, and of this, 65 per cent is to be credited to the Dominion Coal Company.

Nova Scotia:—Output, Sales, Colliery Consumption, and Production.

Calendar Year.	Output, Tons, 2,240 lbs.	Sales, Tons, 2,240 lbs.	Colliery Consump- tion, Tons, 2,240 lbs.	Production,* Tons, 2,240 lbs.	Output, Tons, 2,000 lbs.	Sales, Tons, 2,000 lbs.	Colliery Consump- tion, Tons, 2,000 lbs.	Production,* Tons, 2,000 lbs.	Price per Ton, 2,240 lbs.	Value of Production.
1872.....	880,950	785,914	110,341	896,255	986,664	880,224	123,582	1,003,806	\$ 1 75	\$ 1,568,446
1873.....	1,051,467	881,106	108,398	989,504	1,177,043	986,839	121,406	1,108,245	1 75	1,731,632
1874.....	872,720	794,127	119,582	868,709	977,446	889,022	133,932	972,954	1 75	1,520,240
1875.....	781,165	706,795	124,110	880,905	874,905	791,610	139,003	930,613	1 75	1,454,084
1876.....	709,646	634,207	113,788	747,995	794,804	710,312	127,443	837,755	1 75	1,375,991
1877.....	757,496	687,065	98,841	785,905	848,396	769,513	110,702	880,215	1 75	1,375,339
1878.....	770,603	693,511	88,697	782,138	863,075	776,732	94,262	875,994	1 75	1,368,741
1879.....	788,271	688,624	84,787	773,411	882,863	771,259	94,961	866,220	1 75	1,353,469
1880.....	1,032,710	954,659	96,881	1,051,490	1,156,635	1,069,216	108,451	1,177,669	1 75	1,840,108
1881.....	1,124,270	1,035,014	107,888	1,142,902	1,259,183	1,159,216	120,834	1,280,050	1 75	2,000,079
1882.....	1,365,811	1,250,179	111,381	1,361,500	1,529,708	1,400,200	124,747	1,524,947	1 75	2,382,730
1883.....	1,422,553	1,297,523	111,949	1,409,472	1,593,259	1,453,226	125,388	1,573,609	1 75	2,466,576
1884.....	1,389,295	1,261,650	116,769	1,378,419	1,556,011	1,418,048	130,781	1,543,829	1 75	2,412,233
1885.....	1,352,205	1,254,510	127,624	1,382,134	1,514,470	1,405,051	142,939	1,547,990	1 75	2,418,735
1886.....	1,502,611	1,373,666	142,421	1,516,087	1,682,924	1,538,506	153,512	1,698,018	1 75	2,653,152
1887.....	1,670,830	1,519,684	139,777	1,659,461	1,871,330	1,702,046	156,550	1,858,596	1 75	2,904,057
1888.....	1,776,128	1,576,692	157,443	1,734,135	1,989,263	1,765,895	176,386	1,942,231	1 75	3,034,735
1889.....	1,756,279	1,555,107	158,131	1,713,238	1,967,032	1,741,720	177,107	1,918,827	1 75	2,998,167
1890.....	1,984,001	1,786,111	161,240	1,947,351	2,229,081	2,000,444	180,589	2,181,033	1 75	3,407,864
1891.....	2,044,784	1,849,945	174,383	2,024,328	2,290,158	2,071,938	193,981	2,267,919	1 75	3,543,624
1892.....	1,942,780	1,752,934	175,092	1,928,026	2,175,913	1,963,286	196,103	2,159,389	1 75	3,374,046
1893.....	2,223,042	1,977,543	205,425	2,182,968	2,489,807	2,214,848	230,076	2,444,924	1 75	3,820,194
1894.....	2,250,631	2,060,920	196,206	2,257,126	2,520,707	2,308,231	219,751	2,527,582	1 75	3,949,970
1895.....	1,999,756	1,793,098	193,639	1,986,737	2,289,727	2,008,270	216,875	2,225,145	1 75	3,476,790
1896.....	2,292,675	2,046,828	192,975	2,280,803	2,567,796	2,292,447	216,132	2,508,579	1 75	3,919,655
1897.....	2,340,031	2,044,672	181,716	2,226,388	2,620,835	2,290,032	203,522	2,493,554	1 75	3,896,179
1898.....	2,262,636	2,121,126	167,428	2,288,554	2,534,175	2,375,661	187,519	2,563,180	1 75	4,004,970
1899.....	2,965,443	2,633,989	177,460	2,811,449	3,209,296	2,950,067	198,755	3,148,822	2 00	5,622,898
1900.....	3,298,791	2,998,737	236,563	3,235,300	3,694,646	3,358,585	264,951	3,623,536	2 50	8,088,250
1901.....	3,821,033	3,411,127	301,434	3,712,501	4,279,557	3,820,462	337,606	4,158,068	2 50	8,496,982
1902.....	4,725,480	4,299,120	379,198	4,608,318	5,292,538	4,736,614	424,702	5,161,316	2 00	9,216,636
1903.....	5,215,562	4,565,720	481,903	5,047,623	5,841,429	5,113,607	539,731	5,653,338	2 00	10,065,246
1904.....	5,131,985	4,501,940	444,304	4,996,644	5,747,823	5,097,949	498,292	5,596,241	2 00	9,993,288
1905.....	5,197,877	4,613,818	427,774	5,041,592	5,821,622	5,167,476	479,107	5,646,583	2 00	10,083,184
1906.....	5,844,813	5,093,131	460,891	5,554,022	6,546,191	5,704,307	516,198	6,220,505	2 00	11,108,044
1907.....	5,775,503	5,062,321	611,012	5,673,353	6,468,563	5,669,800	684,333	6,354,133	2 25	12,764,999
1908.....	6,076,330	5,224,787	576,509	5,939,767	6,805,489	5,551,761	645,690	6,652,539	2 25	13,364,476

* This production is obtained by adding sales and colliery consumption. For sales previous to 1872, see report of the Department of Mines, Nova Scotia, 1883, page 51.

COAL.—TABLE 9.
Nova Scotia:—Coal Trade by Counties, Calendar Years 1906-7-8.

Calendar Year.	Cumberland.		Pictou.		Cape Breton.		Other Counties.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
	Short tons.	Short tons.	Short tons.	Short tons.	Short tons.	Short tons.	Short tons.	Short tons.
1906.	650,734	566,308	769,496	657,310	4,804,407	4,221,293	312,554	259,396
1907.	476,828	397,579	750,476	627,024	4,194,774	3,730,651	353,425	307,049
1908.	662,157	530,648	849,802	678,026	4,840,653	4,267,346	452,877	375,742

COAL.—TABLE 10.

Nova Scotia:—Output by Collieries during Fiscal Years ending September 30, 1907-8.¹

Colliery.	1907.	1908.
<i>Cape Breton County.</i>		
	Tons of 2,000 lbs.	Tons of 2,000 lbs.
Dominion Coal Company.....	3,871,769	4,274,993
Nova Scotia Steel and Coal Co.....	744,132	741,832
North Atlantic Collieries.....	*15,465	65,830
McKay Mining Company.....	6,217	15,187
Sydney Coal Company.....	3,419	5,377
Cape Breton Coal Co.....	1,561	
<i>Cumberland County.</i>		
Cumberland Railway and Coal Co.....	379,724	466,068
Maritime Coal, Railway, and Power Co., Chignecto.....	49,440	17,740
" " " " Joggins.....	56,431	57,266
Minudie Coal Co. " " ".....	49,400	54,205
Strathcona Coal Co.....	26,510	26,799
Great Northern Coal Co.....	2,339	3,053
Atlantic Grindstone and Coal Co.....	5,341	964
<i>Colchester County.</i>		
Colchester Coal Co.....		4,425
<i>Pictou County.</i>		
Acadia Coal Co.....	431,207	463,436
Intercolonial Coal Co.....	337,669	353,461
Marsh Colliery.....	50,876	53,586
<i>Inverness County.</i>		
Inverness Coal and Railway Company.....	292,324	317,748
Mabou Coal Co.....	9,300	21,560
Port Hood Coal Co.....	85,213	111,664

* Made up as follows: Gowrie and Blockhouse, 14,366 tons; North Atlantic Collieries, 1,099 tons.

In Cape Breton county the main feature of the coal industry has been the opening of two new collieries by the Dominion Coal Company in the Lingan basin. These are called Collieries No. 12 and No. 14 respectively. They are connected with the Sydney and Louisburg railway by a spur line seven miles in length, and the first shipment from No. 12 was effected in August, 1908. This makes a total of twelve collieries now being operated by the Dominion Coal Company.

The North Atlantic Collieries Company, successors to the Gowrie & Blockhouse Collieries, have sunk a new shaft to the Blockhouse seam, which was struck at a depth of 125 feet, showing 9 feet of coal. Previously the total output of this colliery in the last few years was altogether from the Gowrie system, but it is expected that in the near future the main production will be from the new workings of the Blockhouse seam.

¹ From the Reports of the Department of Mines of Nova Scotia.

A new company, the Colonial Coal Company, has acquired the old mine of the Toronto Coal Company on Bras d'Or lake, which had been abandoned for several years, and this is now being put in order for an output of 200 to 300 tons per day.

In the Pictou field the Acadia Coal Company have proceeded with the development of their new Allan shaft colliery. Two shafts, 130 feet distant, were sunk to cut all the workable seams of this district. The deeper of the two is over 1,500 feet. The intention of the Acadia Coal Company is to develop this colliery into the largest producer of the Pictou field.

In Cumberland county the Maritime Coal, Railway, and Power Company acquired the property of the Canada Coal Company, comprising the Joggins coal area, the Joggins mine, and the railway connecting Joggins and Maccan on the Intercolonial. The old mine has been closed and a new one, entered by three slopes 2,500 feet long, has been started and was in shipping order at the close of 1908. The new mine is laid out and equipped for a possible production of 1,000 tons a day.

The Maritime Coal, Railway, and Power Company have, moreover, built a well equipped and modern power station at Chignecto, where part of the output of their mine is converted into electric power which is disposed of at Amherst, Maccan, and other points within a radius of about fifteen miles.

The power plant in the main consists of one 500 kilowatt generator, compound Robb engine and Robb boilers fired by Jones underfeed stoker.

Table 11, which follows, is compiled from the returns made to the government of Nova Scotia, and is very interesting inasmuch as it shows the markets in which the coal production of Nova Scotia finds an outlet. It will be noticed that the Province of Nova Scotia in 1907 consumed 36.51 per cent of its production, and 35.56 per cent in 1908. The decrease of these two years as compared with 1906, which figures in the table as 37.92 per cent, is probably due to the fact that the bunker coal is included in that year, whereas in 1907 and 1908 it is given as a separate item of 4.05 per cent and 3.53 per cent respectively. The main market, outside of Nova Scotia, is the Province of Quebec, which is supplied by the St. Lawrence route. The United States market shows a decrease from year to year since 1906, having figured as 14.78 per cent in that year; 12.21 per cent in 1907, and only 9.11 per cent in 1908.

COAL.—TABLE 11.

Nova Scotia:—Distribution of Coal Sold.

FISCAL YEARS ENDING SEPTEMBER 30.

Markets.	1906.		1907.		1908.	
	Tons of 2,000 lbs.	%	Tons of 2,000 lbs.	%	Tons of 2,000 lbs.	%
Nova Scotia—						
Transported by land.....	1,622,131	27·82	1,740,736	30·80	1,804,377	29·37
" " sea.....	589,014	10·10	322,773	5·71	380,332	6·19
Total, Nova Scotia.....	2,211,145	37·92	2,063,509	36·51	2,184,709	35·56
New Brunswick.....	487,068	8·35	478,383	8·46	571,570	9·30
Prince Edward Island.....	86,026	1·48	86,792	1·54	70,931	1·15
Quebec Province.....	1,948,014	33·41	1,914,743	33·88	2,293,352	37·33
Newfoundland.....	167,447	2·87	164,082	2·90	231,909	3·77
United States.....	862,148	14·78	690,269	12·21	559,592	9·11
West Indies.....			2,910	0·05		
Mexico.....			8,502	0·15		
St. Pierre.....					9,976	0·16
Bunker coal.....			229,121	4·05	216,554	3·53
Other countries.....	69,556	1·19	13,981	0·25	5,261	0·09
Totals.....	5,831,404	100·00	5,652,292	100·00	6,143,854	100·00

New Brunswick.

The coal production of New Brunswick is derived from the Grand Lake coal field, in Queens county, where a comparatively large number of small mines—probably thirty or forty—are intermittently operated. It is very difficult to obtain accurate figures of production from this Province, but according to a reliable estimate made by the provincial authorities, the production in 1908 would be about 60,000 tons valued at \$135,000. This is a considerable increase over the previous year's production.

COAL.—TABLE 12.

New Brunswick:—Production.

Calendar Year.	Tons.	Value.	Value per ton.	Calendar Year.	Tons.	Value.	Value per ton.
		\$	\$ cts.			\$	\$ cts.
1887.....	10,040	23,607	2 35	1898.....	6,160	9,240	1 50
1888.....	5,730	11,050	1 93	1899.....	10,528	15,792	1 50
1889.....	5,673	11,733	2 07	1900.....	10,000	15,000	1 50
1890.....	7,110	13,850	1 95	1901.....	17,630	51,857	2 94
1891.....	5,422	11,030	2 03	1902.....	18,795	39,680	2 11
1892.....	6,768	9,375	1 39	1903.....	16,000	40,000	2 50
1893.....	6,200	9,837	1 59	1904.....	9,112	18,224	2 00
1894.....	6,469	10,264	1 59	1905.....	29,400	58,800	2 00
1895.....	9,500	14,250	1 50	1906.....	34,076	68,152	2 00
1896.....	7,500	11,250	1 50	1907.....	34,584	77,814	2 25
1897.....	6,000	9,000	1 50	1908.....	60,000	135,000	2 25

Saskatchewan.

The coal consumption in Saskatchewan is mainly for domestic uses, as wood is scarce in the Province. Owing to the conditions which prevailed during the early part of 1907, viz., a shortage of railway cars for coal shipments, accompanied by an unusually severe winter and heavy snowfall which paralyzed traffic, the Province of Saskatchewan experienced a serious shortage of fuel during the first four months of 1907, which caused great inconvenience and suffering among the settlers and in the cities. However, the reaction which followed resulted in an increased output for 1907, during which stocks for the following winter were accumulated. It follows that the tonnage in 1908 shows a decrease of 676 tons as compared with the previous year. This, however, is abnormal, especially if we consider the large influx of new settlers who yearly assist in increasing the development and the population of the Province.

Table 13, following, gives the statistics of the coal production of Saskatchewan since 1890. Saskatchewan was established as a province on September 1, 1905. For the purpose of statistics the coal production previous to that date is that of the area included by the present boundaries of the Province.

COAL.—TABLE 13.

Saskatchewan:—Annual Production.

Calendar Year.	Tons.	Value.	Average value per ton.
		\$	\$ cts.
1890.....	200	200	1 00
1891.....	5,400	9,325	1 73
1892.....	8,325	12,485	1 50
1893.....	†15,051	15,153	1 01
1894.....	15,769	31,538	2 00
1895.....	16,706	25,059	1 50
1896.....	25,000	37,500	1 50
1897.....	25,000	37,500	1 50
1898.....	25,000	37,500	1 50
1899.....	40,500	60,750	1 50
1900.....	45,000	72,000	1 60
1901.....	70,400	112,640	1 52
1902.....	116,708	169,618	1 45
1903.....	124,885	187,021	1 50
1904.....	107,596	152,334	1 42
1905.....	108,398	164,146	1 51
1906.....	151,232	252,437	1 67
1907.....	150,556	253,790	1 69
1908.....			

† Including a small quantity from the Turtle Mountain district, Manitoba.

Another noteworthy feature of the coal industry in Saskatchewan in 1907 and 1908 was the attempt of the government of Saskatchewan to go into the coal mining industry. The following paragraph concerning this venture is quoted from official information received at this office: 'The mine is located in township

32, ranges XX and XXI, west of the 3rd meridian. In this area eight bore-holes were made, ranging in depth from 114 to 246 feet. In range XX one bore-hole failed to show any appearance of coal, while the other bore-holes in this range showed only slight traces of coal in thin layers. In range XXI, however, the bore-holes showed that coal appeared in seams ranging from 1 to 6 feet in thickness. A shaft has been sunk and cribbed almost to the bottom. The cribbing was reported, however, to be in very poor shape.

'During 1908, the year following the above report, a shaft was sunk, and it was discovered that the bore-holes had crossed the seams of coal in a diagonal direction, and that the coal thickness of the seams was only about 50 per cent of what had been reported. Operations were carried on for a short time but were discontinued.'

Alberta.

In 1908 the coal production of Alberta was 1,685,661 tons, an increase of 441 per cent over the production of 1900, which was 311,450 tons. This remarkable growth is a natural consequence of the development of the Province, both agriculturally and industrially. A noteworthy feature of the coal industry of Alberta is that only 6 per cent of the production is exported, so that 94 per cent of the coal mined in the Province is consumed in Canada. The product of the coal mines of Alberta may be roughly divided into 32 per cent lignite, and 68 per cent bituminous and anthracite.

In 1908 we have only a comparatively small increase to record as compared with 1907. This is due to several unfavourable causes which militated against the coal industry. The industrial depression that prevailed over the whole of the North American continent not only affected the smelting industry of British Columbia, which was an important outlet for the bituminous coal of southwestern Alberta, but diminished immigration; and this, as well as some labour troubles, contributed to cause a slight check in the very high rate of increase which has prevailed in Alberta for the last ten years. This, however, is only temporary, and it may safely be expected that 1909 will show a considerable increase over 1908.

Table 14, following, gives the figures of the annual production of coal in Alberta since 1887. For the years previous to 1905 the production is that of the territory enclosed by the present boundaries of the Province.

COAL.—TABLE 14.

Alberta:—Annual Production.

Calendar Year.	Tons.	Value.	Average value per ton.
		\$	\$ cts.
1887.....	74,152	157,577	2 13
1888.....	115,124	183,354	1 59
1889.....	97,364	179,640	1 85
1890.....	128,753	198,298	1 54
1891.....	174,131	437,243	2 51
1892.....	173,970	460,605	2 57
1893.....	230,070	586,260	2 55
1894.....	184,940	473,827	2 56
1895.....	169,885	382,526	2 25
1896.....	209,162	581,832	2 78
1897.....	242,163	630,408	2 60
1898.....	315,088	788,720	2 50
1899.....	309,600	774,000	2 50
1900.....	311,450	778,625	2 50
1901.....	340,275	850,687	2 50
1902.....	402,819	960,601	2 38
1903.....	495,893	1,117,541	2 25
1904.....	661,732	1,404,524	2 12
1905.....	931,917	1,993,915	2 14
1906.....	1,246,360	2,614,762	2 10
1907.....	1,591,579	3,836,286	2 41
1908.....	1,685,661	4,127,311	2 45

On July 4, 1907, the Board of Railway Commissioners for Canada issued the following order amongst others: 'No railway company subject to the legislative authority of the parliament of Canada shall burn lignite coal on its locomotive engines as fuel for transportation purposes, until such time as the Board shall otherwise order or direct. Lignite coal includes all varieties of coal, the properties of which are intermediate between wood and coal of the older formations. Every such railway company burning or permitting to be burned lignite coal on its locomotive engines in contravention of the regulation herein in this behalf shall be subject to a penalty of twenty-five dollars.

'This regulation shall take effect and be operative on and from the first day of September, 1907.

'This regulation shall not have effect during the months of December, January, February or March in any year.'

This ruling, which is a preventive measure against fire set by sparks issuing from locomotives, affects the coal mined east of Macleod on the Crows Nest line of the Canadian Pacific railway; east of Cochrane on the main line of the railway, and along the Macleod, Calgary, and Edmonton sections of the Canadian Pacific railway, as well as the lignite of the Edmonton district.

The following figures concerning the classified coal output of Alberta are quoted from the report of the provincial inspector of mines for 1908. There is a slight difference between this total and that compiled from the returns received

at this office, owing to the fact that the figures of production compiled by this department represent the amount of coal which is actually used or finds its way to the market, whereas the figures of the provincial report are those of the coal extracted from the mines, some of which goes to the stock piles, and a part is lost in preparing for market.

CLASSIFICATION OF OUTPUT OF COAL IN ALBERTA DURING THE
YEAR 1908.

	Tons.
Lignite coal.	584,334
Bituminous coal.	1,011,571
Anthracite coal.	249,095
Coal used in coke production.	128,397
Coke produced.	75,657
Briquettes produced.	36,261

It may be here mentioned that the anthracite is very carefully prepared for the market and divested of all its friable parts. As a result, a large proportion of anthracite dust is produced. A part of this is manufactured into briquettes, which find a ready market for domestic use.

Yukon.

In 1908 the production of coal in the Yukon was much lower than in previous years. This is probably due to the fact that considerable stock was accumulated in 1907, which was drawn upon for domestic consumption in 1908.

COAL.—TABLE 15.
Yukon Territory:—Annual Production.

Calendar Year.	Tons.	Value.	Average value per ton.
		\$	\$ cts.
1901.			
1902.	*5,864	86,230	14 70
1903.	4,910	37,280	7 59
1904.	1,849	29,584	16 00
1905.			
1906.	7,000	21,000	3 00
1907.	7,000	28,000	4 00
1908.	15,000	60,000	4 00
	3,847	21,158	5 50

* Part of this production was mined in 1900.

The average value of the coal given in the last column of the table represents the value of the coal at the mine. The price of the coal delivered at Dawson varies between \$12 and \$18 a ton.

In 1907 coal was mined in the Yukon in two fields, viz., in the Tantalus field on the Lewes river in southern Yukon, and on Coal creek, a small tributary of the Yukon, which joins the stream fifty-eight miles below Dawson.

The Tantalus field is the more important, as coal of a marked bituminous character exists there in large quantities, whereas the product of the other field is lignitic in character.

There are at present two well established collieries in the Tantalus field, which supply the fuel for the steamers running between Whitehorse and Dawson; the coal is also used for domestic purposes, and for generating power in Dawson.

In 1908 the production came altogether from the Tantalus field.

British Columbia.

Table 16 gives statistics of the coal production in British Columbia since 1836. It will be noticed that the output in 1908 shows a decrease of 107,671 long tons as compared with the previous year, which had the highest output ever recorded. But the coal which actually found its way to the markets or was consumed at the collieries, viz., home consumption and exports, which we give as the production for the year, showed a decrease in 1908 of only 27,848 long tons, considerable quantities having been drawn from stock piles.

In both 1907 and 1908 the main coal producers of British Columbia were the same as previous years, viz., the Crow's Nest Pass Coal Company, in East Kootenay; the Wellington Colliery Company, and the Western Fuel Company, both of the latter in the Vancouver Island fields. It is worthy of notice, however, that to these three companies, which were the only ones to ship coal in 1906, a number of other producing mines were added in 1907, when six companies made returns of shipments; and still more in 1908 when the number was further increased to nine.

In 1907 the production of coal in the Province was 2,111,516 long tons, an increase of 195,211 long tons, or 10·18 per cent over 1906. This total was made up of 916,265 long tons used in Canada, 673,114 long tons exported as coal, (by far the greater part to the United States), 165,918 long tons for colliery consumption and local sales, and 356,219 long tons charged into the coke ovens. In 1908 the sales in Canada were 931,929 long tons, exports of coal 597,157 long tons, colliery consumption 174,950 long tons, and used for making coke, 379,632 long tons, a total of 2,083,668 long tons; which is 27,848 tons less than the production of 1907, or a decrease of 1·3 per cent.

The following tabulation shows the markets in which the British Columbia coal and coke were disposed of in 1907 and 1908:—

COAL.	1907.			1908.		
	Coast.	Crowsnest and Nicola valley.	Total.	Coast.	Crowsnest and Nicola valley.	Total.
	Long tons.			Long tons.		
Sold for consumption in Canada.	688,332	227,933	916,265	703,931	227,998	931,929
" export to United States.	359,666	231,410	651,076	300,445	266,829	567,274
" " other countries.	22,038	.....	22,038	29,883	.....	29,883
	1,070,036	519,343	1,589,379	1,034,259	494,827	1,529,086
COKE.	Short tons			Short tons		
Sold for consumption in Canada.	16,593	157,903	174,496	3,253	231,638	234,891
" export to United States.	.....	67,076	67,076	3,492	38,300	41,792
" " other countries.	.....	.....	.....	.....	.....	.....
	16,593	224,979	241,572	6,745	269,938	276,683

Table 16, following, gives the statistics of the coal production of British Columbia from the early days of the industry to the present.

COAL.—TABLE 16.

British Columbia:—Production.

Calendar Year.	Output, Tons, 2,240 lbs.	Home Consumption, Tons, 2,240 lbs.	Sold for Export, Tons, 2,240 lbs. †	PRODUCTION.*		Price per ton, 2,240 lbs.	Value.
				Tons, 2,240 lbs.	Tons, 2,000 lbs.		
1836-52...	10,000				11,200	4 00	40,000
1852-59...	25,398				28,446	4 00	101,592
1859 §...	1,989				2,228	4 00	7,956
1860.....	14,247				15,957	4 00	56,988
1861.....	13,774				15,427	4 00	55,096
1862.....	18,118				20,292	4 00	72,472
1863.....	21,345				23,906	4 00	85,380
1864.....	28,632				32,068	4 00	114,528
1865.....	32,819	From 1836 to 1873, inclusive, the output is taken as production.			36,757	4 00	131,276
1866.....	25,115				28,129	4 00	100,460
1867.....	31,239				34,938	4 00	124,956
1868.....	44,005				49,286	4 00	176,020
1869.....	35,802				40,098	4 00	143,208
1870.....	29,843				33,424	4 00	119,372
1871-2-3..	148,459				166,274	4 00	593,836
1874.....	81,547	25,023	56,038	81,061	90,788	3 00	243,183
1875.....	110,145	31,252	66,392	97,644	109,361	3 00	292,932
1876.....	139,192	17,856	122,329	140,185	157,007	3 00	420,555
1877.....	154,052	24,311	115,381	139,692	156,455	3 00	419,076
1878.....	170,846	26,166	164,682	190,848	213,750	3 00	572,544
1879.....	241,301	40,294	192,096	232,390	260,277	3 00	697,170
1880.....	267,595	46,513	225,849	272,362	305,045	3 00	817,086
1881.....	228,357	40,191	189,323	229,514	257,056	3 00	688,542
1882.....	282,139	56,161	232,411	258,572	323,201	3 00	865,716
1883.....	213,293	64,786	149,567	214,353	240,075	3 00	643,059
1884.....	394,070	87,588	306,478	393,866	441,130	3 00	1,181,598
1885.....	365,596	95,227	237,797	333,024	372,987	3 00	999,072
1886.....	326,636	85,987	249,205	335,192	375,415	3 00	1,005,576
1887.....	413,360	99,216	334,839	434,055	486,142	3 00	1,302,165
1888.....	489,301	115,953	365,714	481,667	539,467	3 00	1,445,001
1889.....	579,830	124,574	443,675	568,249	636,439	3 00	1,704,747
1890.....	678,140	177,075	508,270	685,345	767,586	3 00	2,056,035
1891.....	1,029,097	202,697	806,479	1,009,176	1,130,277	3 00	3,027,528
1892.....	826,335	196,223	640,579	836,802	937,218	3 00	2,510,406
1893.....	978,294	207,851	768,917	976,768	1,093,980	3 00	2,930,304
1894.....	1,012,953	165,776	827,642	993,418	1,112,628	3 00	2,980,254
1895.....	939,654	188,349	756,334	944,683	1,058,045	3 00	2,834,049
1896.....	894,882	261,984	634,238	896,222	1,003,769	3 00	2,688,666
1897.....	802,296	290,310	619,860	910,170	1,019,390	3 00	2,730,510
1898.....	1,136,485	375,423	752,863	1,128,286	1,263,680	3 00	3,884,858
1899.....	1,306,324	526,058	751,711	1,277,769	1,431,101	3 00	3,833,307
1900.....	1,590,178	685,667	914,184	1,599,851	1,791,833	3 00	4,799,553
1901.....	1,691,557	799,666	914,163	1,713,829	1,919,488	3 00	5,141,487
1902.....	1,641,626	837,871	776,809	1,614,680	1,808,441	3 00	4,844,040
1903.....	1,450,663	947,499	549,449	1,496,948	1,676,581	3 00	4,490,844
1904.....	1,685,698	1,129,465	533,593	1,663,058	1,862,625	3 00	4,989,174
1905.....	1,736,696	1,089,667	647,343	1,737,010	1,945,452	3 00	5,211,030
1906.....	1,899,076	1,236,476	679,829	1,916,305	2,146,262	3 00	5,748,915
1907.....	2,219,602	1,438,402	673,114	2,111,516	2,364,898	3 50	7,390,306
1908.....	2,111,931	1,486,511	597,157	2,083,668	2,333,708	3 50	7,292,838

* This production is obtained by adding 'Home Consumption' and 'Sold for Export.'

† 52,935 tons of this amount were exported as sales without the division into 'Home Consumption' and 'Sold for Export.'

‡ The figures in the 'Sold for Export' column do not agree as they should with those given in Table 5, the only explanation being that the data in the two cases are from different sources, and it has not been possible to find out the cause of the difference.

§ Two months only.

The Crow's Nest Pass Coal Company continues to be the largest producer in the East Kootenay field. In 1908 the returns from this Company show that coal was shipped from their three collieries, situated at Michel, Coal Creek, and Carbonado respectively. This latter colliery was idle for some eighteen months during 1906 and 1907, but it has been reopened and shipments resumed.

One of the features of the year in the Crowsnest district has been the first shipment of coal from the Hosmer colliery at Hosmer, which was made in December, 1908. Development operations were begun in 1907 at this mine, and have been pushed actively since that time. The Hosmer Mines, Limited, have now an extensive colliery and plant, modern in all its details, designed for a daily output of 4,000 tons, which is expected to give a large production in 1909.

Another new Company operating in this field has made returns of shipments, viz., the Corbin Coal and Coke Company, whose mine is on the south fork of Michel creek. This Company is also likely to have a large output in the near future. The Nicola Valley branch of the Canadian Pacific railway, which runs from Spences Bridge to the town of Nicola, was completed in the summer of 1907, giving access by rail to the coal mines of that region. The first shipment of coal from the mines of the Nicola Valley Coal and Coke Company was made in August, 1907.

The years 1907 and 1908 have been marked on the island of Vancouver by the opening of new collieries, and resumption of work on some which had been abandoned for a long time. In 1908, the mines from which shipments were made were: the Nanaimo and the Northfield mines of the Western Fuel Company; the Extension and Cumberland mines of the Wellington Colliery Company; the Fiddick Colliery of South Wellington Coal Mines, Limited; the Gilfillan Colliery of Macgowan & Co.; the New East Wellington Colliery of the Vancouver Nanaimo Coal Mining Company.

Besides the operation of mines which have reached the shipping stage, a great deal of prospecting work has been done throughout the year in coal fields which are yet in the prospective stages, such as the Upper Elk district; the vicinity of Princeton; Malcolm island; the Skeena district and others. There is no doubt that most of these will be heard from in the near future.

LABOUR AND ACCIDENTS.

We give below some tables and statements concerning labour employed during the year 1908 in the coal industry of the three main coal producing provinces of Canada, viz., Nova Scotia, Alberta, and British Columbia. The figures are compiled for the most part from the reports of the respective provincial governments.

NOVA SCOTIA.
*Employment Statistics of the Coal Industry, year ended September 30, 1908.

Company.	Method of Work.	Average number of days per month.	DISTRIBUTION OF COL- LIERY WORKMEN.			Total Horses.	ACCESSORY OPERATIONS.			Approximate num- ber employed at points of dis- charge.	Total Workmen.
			Surface.	Under- ground.	Cutting Coal.		Trans- portation.	Commer- cial.	Up-keep, re- pairs, con- struction.		
Dominion Coal Co.	Bord and pillar.	24½	1,044	3,849	1,480	608	866	253	316	1,000	8,808
Nova Scotia Steel and Coal Co.	"	26½	258	686	680	30	225	65	20	50	1,984
" " " " " " " "	"	24	20	50	41	1	1	1	1	1	115
Cumberland Railway and Coal Co.	"	18½	324	636	480	86	203	18	184	55	1,806
Acadia Coal Co.	Longwall, bord and pillar.	25	403	534	507	78	8	5	5	24	1,678
Intercolonial Coal Co.	"	24	1,016	422	295	37	20	5	5	3	1,766
Maritime Railway and Coal Co., Joggins	"	24½	10	8	6	6	6	4	123	151	151
" " " " " " " "	"	23	38	61	53	8	74	6	40	16	136
Inverness Railway and Coal Co.	Bord and pillar.	26	122	303	259	32	7	1	1	1	880
Mabou and Gulf Coal Co.	"	26	25	34	21	3	3	1	1	1	89
Sydney Coal Co.	"	21	2	5	5	1	1	1	1	1	14
Mackay Mining Co.	"	23	10	10	15	1	1	1	2	1	38
North Atlantic Collieries.	"	20½	55	75	74	22	74	4	4	178	386
Port Hood-Richmond Ky. and Coal Co.	"	22	62	90	73	10	22	4	4	229	229
Great Northern Coal Co.	"	26	12	24	24	2	3	2	2	39	39
Minidie Coal Co.	Longwall.	21½	33	36	92	6	4	2	2	167	167
Sutherland Coal Co.	" advancing.	21	17	80	48	6	1	2	2	147	147
Atlantic Grindstone and Coal Co.	"	22	2	2	4	1	1	1	1	9	9
The Colchester Coal Co.	Bord and pillar.	22½	12	6	8	1	1	2	2	28	28
		23½	3,405	6,887	4,195	980	1,500	395	692	1,326	18,460

NOTE.—Distribution of workmen in accessory operations, 'Transportation,' including railways, shops, piers, banking station and all factors of trans-
portation. 'Commercial,' including offices, (outside colliery offices) warehouses, stores, and accounting. 'Construction,' includes all construction-men
outside of colliery organization.

* Nova Scotia Department of Mines Report for 1908.

Alberta.

We were unable to obtain the details of the distribution of men employed in the Alberta coal mines. The number of workmen employed in the coal and lignite mines of Alberta in 1908, according to the report of the provincial inspector of mines, was 3,780, of which 2,681 were employed underground, and 1,099 on the surface. We give below a schedule of the average wages which ruled for various classes of labour in the mines during the year. The day's work is eight hours underground and ten hours on the surface.

	Per day.
Fire bosses, rock miners, miners in wet places, blacksmiths, mine carpenters, power house engineers, machine men.	\$3 50
Tipple engineers, locomotive engineers (surface)	3 25
Machinists	3 20
Shot lighters, bratticemen, timbermen, drivers (wet places), team drivers, tracklayers, miners, machine men helpers, car repairers	3 00
Locomotive helpers (surface)	2 80
Timbermen helpers, drivers, tracklayer helpers, locomotive engineers (underground), switchmen, chute loaders, timber handlers, hoistmen, rope riders	2 75
Bratticemen, helpers, labourers (underground), couplers, pushers, pithead men, teamsters, blacksmith helpers, firemen, fanmen, lampmen, machinists' helpers	2 50
Outside labourers	2 00
Switch boys, slate pickers, car oilers, railway car handlers, etc.	\$1 25 to 2 25

British Columbia.

The following tables are compiled from the Report of the Minister of Mines of British Columbia for the year 1908:—

Number of Hands employed in Coal Mining in British Columbia in 1908.

LABOUR.	COAST COLLIERIES— NICOLA VALLEY.		EAST KOOTENAY COLLIERIES.		Total.
	Under- ground.	Surface.	Under- ground.	Surface.	
Supervision and clerical assistance	48	52	52	36	188
Whites:—miners	1,130	769	769	443	1,899
miners' helpers	462	220	220	16	682
labourers	462	77	289	275	1,291
mechanics and skilled labourers	80	174	385	16	914
boys	136	41	31	16	224
Japanese	110	37	147		147
Chinese	235	482		8	725
Indians	3				3
	2,686	863	1,746	778	6,073

Average Daily Wages, Salaries, Etc.

	COAST DISTRICT.		EAST KOOTENAY.		NICOLA VALLEY.	
	Under-ground.	Surface.	Under-ground.	Surface.	Under-ground.	Surface.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Supervision and clerical.....			5.75-5.00	3.00-5.00		
Whites:—miners.....	3.30-6.50		3.00-3.75		4.50	
miners' helpers.....	2.86		2.50-2.75		2.50	
labourers.....	2.86-3.30	2.75	2.50	2.25		2.50-2.75
mechanics and skilled labourers.....	2.86-3.30	3.00-4.50		2.75-4.00		3.30-5.00
boys.....	1.10-2.45	0.50-1.65		1.25		1.00
Japanese.....				1.50		
Chinese.....		1.50-1.75				
Indians.....						

The returns of some of the important coal companies are not published in the Report of the Minister of Mines; therefore, the above figures do not necessarily represent the average of the wages paid by all the coal companies. However, they are believed to be sufficiently accurate to be of interest.

From the same sources we have compiled the following table:—

Accidents in Canadian Collieries during the year 1908.

Nature of Accident.	NOVA SCOTIA.			ALBERTA.			BRITISH COLUMBIA.		
	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.	Fatal.	Serious.	Slight.
Fall of coal, rock.....	15	37	39	4	12	4	8	16	17
Gas or dust explosions.....	10			5	6	1	1		8
Explosives.....	1	2	6		2			2	4
Miscellaneous.....	15	31	62	2	18	8	9	32	23
	41	70	107	11	38	13	18	50	52
Total men employed.....		18,460			3,780			6,095	

For Nova Scotia the statement is for the year ending September 30, 1908; for the other provinces the calendar year is taken.

COKE.

In 1908 three Provinces contributed to the production of oven coke in Canada, viz., Nova Scotia, Alberta, and British Columbia. From returns received the coal used in the manufacture of coke was 1,315,904 short tons, which gave an output of 852,296 tons of coke, or a yield of 64·7. Besides this yield of coke, some by-products are recovered from the ovens of the Dominion Iron and Steel Company at Sydney; these by-products are tar and ammonia. The ammonia gas is extracted from the oven gas and used in the manufacture of ammonium sulphate. The tar is sold to the Dominion Tar and Chemical Company, whose works are contiguous to the coke oven plant, and this product is further treated for the manufacture of refined tar, pitch of various grades, benzole, creosote, carbolic acid, etc. Returns of the production of these are not received at this office.

By provinces the production for 1907 and 1908, in tons of 2,000 lbs., was as follows:—

Coke Production, 1907.

Province.	Coal charged to Ovens.	Output of Coke.	STOCK ON HAND.		Coke sold or used.	Value of Sales, etc.
			Jan. 1.	Dec. 31.		
	Tons.	Tons.	Tons.	Tons.	Tons.	\$
Nova Scotia	832,916	529,851	845	6,586	524,110	1,991,047
Alberta.....	112,887	73,782	3,686	1,147	76,321	297,596
British Columbia....	398,864	249,663	1,745	9,836	241,572	1,294,826
Totals.....	1,344,667	853,296	6,276	17,569	842,003	3,583,468

Coke Production, 1908.

Nova Scotia	754,478	499,551	6,586	208	505,929	1,658,151
Alberta.....	128,398	75,657	588	600	75,645	309,019
British Columbia....	433,028	277,088	9,836	10,241	276,683	1,482,191
Totals.....	1,315,904	852,296	17,010	11,049	858,257	3,449,361

Tonnage of coke sold, or used in 1907 shows an increase of 59,948 tons, or 7·67 per cent, as compared with 1906; that used or sold in 1908 an increase of 16,254 tons, or 1·93 per cent as compared with 1907.

The statistics of the coke production as represented by coke sold or used since 1886 are given in the following table:—

COKE.—TABLE 1.
Annual Production, 1886-1908.

Calendar Year.	Tons.	Value.	Value per ton.
		\$	\$ cts.
1886.....	35,396	101,940	2 88
1887.....	40,428	135,951	3 36
1888.....	45,373	134,181	2 96
1889.....	54,539	155,043	2 84
1890.....	56,450	166,298	2 95
1891.....	57,084	175,592	3 08
1892.....	56,135	160,249	2 85
1893.....	61,078	161,790	2 65
1894.....	58,044	148,551	2 56
1895.....	53,356	143,047	2 68
1896.....	49,619	110,257	2 22
1897.....	60,686	176,457	2 91
1898.....	87,600	286,000	3 26
1899.....	100,820	350,022	3 47
1900.....	157,134	649,140	4 13
1901.....	365,531	1,228,225	3 36
1902.....	502,043	1,519,185	3 03
1903.....	561,318	1,734,404	3 09
1904.....	554,083	2,032,048	3 66
1905.....	700,488	2,436,211	3 48
1906.....	782,055	2,863,503	3 66
1907.....	842,003	3,583,468	4 26
1908.....	858,257	3,449,361	4 02

Table 2, which follows, gives the statistics of the coke production for the last eleven years, divided into provinces.

COKE.—TABLE 2.
Production of Coke by Provinces, 1897-1908.

Calendar Year.	NOVA SCOTIA.		BRITISH COLUMBIA.		ALBERTA.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$
1897.....	41,532	90,950	19,154	85,507	.....	.....
1898.....	48,400	111,000	39,200	175,000	.....	.....
1899.....	62,459	178,767	38,361	171,255	.....	.....
1900.....	61,767	223,395	95,367	425,745	.....	.....
1901.....	222,694	590,560	142,837	637,665	.....	.....
1902.....	363,330	899,930	138,713	619,255	.....	.....
1903.....	371,745	888,094	189,573	846,310	.....	.....
1904.....	275,927	805,022	257,172	1,148,090	20,984	78,936
1905.....	386,366	1,054,712	269,256	1,202,035	44,866	179,464
1906.....	476,364	1,540,976	236,205	1,054,485	69,486	268,042
1907.....	524,110	1,688,070	241,572	1,049,432	76,321	297,595
1908.....	505,929	1,658,151	276,683	1,482,191	75,645	309,019

It will be noticed that in 1908 the tonnage of the coke production of Nova Scotia and Alberta, respectively, shows a decrease. However, this was more than made up by an increase of production from British Columbia, making the total for Canada for the year 16,254 tons in excess of that of 1907. The coke produced in Nova Scotia is used almost exclusively in blast furnaces for the smelting of iron ores. None of it is exported.

The smelting industries of southern British Columbia, and of the east coast of Vancouver island, constitute the main market for the coke produced in Alberta and British Columbia, consuming nearly 75 per cent of the total production; while some 25 per cent is exported for the use of similar industries in the United States. There is, of course, a small local consumption by foundries and for domestic use; but this accounts for only a very small percentage of the total.

Table 3 gives the exports of coke, which are all to the United States.

COKE.—TABLE 3.

Exports of Coke to the United States, 1897-1908.

Calendar Year.	Tons.	Value.
		\$
1897.....	2,987	6,078
1898.....	3,774	8,394
1899.....	5,557	18,726
1900.....	41,529	131,278
1901.....	57,505	176,990
1902.....	62,568	180,920
1903.....	32,608	135,957
1904.....	102,463	345,031
1905.....	116,071	509,908
1906.....	37,003	168,571
1907.....	70,617	320,357
1908.....	58,708	248,759

Coke is imported into Canada from the United States mainly to supply the iron and steel industries of Ontario. In 1908 these imports amounted to 619,269 tons. The figures for this year cannot be compared with those for 1907, as the latter, owing to the change made in the fiscal year, are only for nine months, from July 1, 1906, to March 31, 1909.

COKE.--TABLE 4.

Imports of Oven Coke, 1880-1908.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1880.....	3,837	19,353	1895.....	43,235	149,434
1881.....	5,492	26,123	1896.....	61,612	203,826
1882.....	8,157	36,670	1897.....	83,380	267,540
1883.....	8,943	38,588	1898.....	135,060	347,040
1884.....	11,207	44,518	1899.....	141,284	362,826
1885.....	11,564	41,291	1900.....	187,878	506,839
1886.....	11,858	39,756	1901.....	308,786	680,138
1887.....	15,110	56,222	1902.....	267,142	842,815
1888.....	25,487	102,334	1903.....	256,723	1,222,756
1889.....	29,557	91,902	1904.....	221,050	765,123
1890.....	36,564	133,344	1905.....	371,593	807,842
1891.....	38,533	177,605	1906.....	480,222	1,311,375
1892.....	43,499	194,429	1907.....	400,536	1,132,680
1893.....	41,821	156,277	1908.....	619,269	2,166,036
1894.....	42,864	176,996			

* For nine months only.

Coke is manufactured from coal mined in five of the coal basins of Canada, viz., the Sydney field, the Pictou field, both in Nova Scotia; the Frank-Blairmore field in southwestern Alberta; the Crowsnest field in East Kootenay, and the Comox field on Vancouver island, both of the latter in British Columbia.

The following table shows the proportionate yield in coke from the coals of the various fields charged into the ovens. These percentages of coke produced relatively to the coal charged have been compiled from the returns of the last four years.

Year.	Sydney Field.	Pictou Field.	Frank-Blairmore Field.	Crowsnest Field.	Comox Field, Vancouver island.
1905.....	62·90	50·22	65·14	64·38	49·61
1906.....	63·65	53·41	66·74	62·29	38·90
1907.....	64·22	54·81	65·36	63·97	49·10
1908.....	66·42	55·81	58·92	65·08	49·73
Average*.....	64·42	52·84	63·68	63·97	47·15

*The average has been computed from the total coal charged during the four years and the total coke output resulting.

In the Sydney field the ovens used are all by-product ovens; whereas the coal of the Pictou field is made into coke in bee-hive ovens. We may here mention that a certain amount of Springhill coal, Cumberland field, is mixed with this coal, which it has not been possible to separate to calculate the yield in coke.

In the Blairmore field both Belgian ovens and bee-hive ovens are used. On Vancouver island the coke is made in bee-hive ovens.

It may be interesting to point out that in this last field only the fine screenings are used in the manufacture of coke. This coal is thoroughly washed before being charged into the ovens, and the refuse resulting from this treatment often amounts to 50 per cent. This refuse is rejected, and only the washed coal is charged into the ovens. The yield is computed from the quantity of washed coal.

PEAT.

In 1907, returns of production of peat were received from only one company, viz., the Interwest Peat Fuel Company, which manufactured 50 tons, valued at \$200. This Company had just completed the installation of their plant and started operations when the buildings were destroyed by fire.

In 1908, the only production of peat fuel recorded was 60 tons, manufactured on the Anrep machine at Victoria Road peat bog, Victoria county, Ont., and which it is intended to use for experimental purposes at the fuel testing plant of the Department of Mines, Ottawa.

Sales of Peat during the past nine years have been reported as follows:—

	Tons.	Value.
1900.	400	\$1,200
1901.	220	600
1902.	475	1,663
1903.	1,100	3,300
1904.	800	2,400
1905.	80	260
1906.	474	1,422
1907.	50	200
1908.	60	180

A great deal of experimental work has been done in the past, and is at present being carried on, towards establishing the peat fuel industry on a sound basis in the Canadian provinces which are devoid of fossil fuel deposits.

The results obtained so far by individual experimenters have been disappointing, and although this industry is very successfully carried on in several European countries, it is yet in the initial stages in Canada after several years of trials.

The failures may be entirely ascribed to lack of knowledge of the properties, to the employment of impracticable methods of working, and to the choice of unsuitable bogs on the part of the peat companies.

Recognizing the great services that the successful establishment of this industry would render in the Canadian provinces, which have to rely on the United States for the greater part of their supply of fuel, the Mines Branch of the Department of Mines initiated two years ago a systematic investigation, which, it is hoped, will go a long way towards helping the successful exploitation of the peat bogs and the production of peat fuel from this source for industrial and domestic purposes.

In 1907, Mr. Erik Nyström was commissioned by Dr. Haanel, Director of the Mines Branch, to investigate the processes in use in Europe, and an exhaustive report on peat and lignite was published. This work was followed by the study of several individual peat bogs, easy of access, favourably situated for a peat fuel market, or for disposing of power generated from the peat at the bog.

This report, which gives the results of the investigation of the Mer Bleue, Alfred, Welland, Newington, Perth, and Victoria peat bogs, was issued in the early part of 1909, and may be obtained by applying to the Director of Mines Branch, Department of Mines, Ottawa.

The following is a tabulated statement of the main results of this investigation:—

Ontario Peat Bogs.*

Location.	Mer Bleue Peat Bog. Tps. of Gloucester and Cumberland near Ottawa.	Alfred Peat Bog. Tps. of Alfred and Caledonia, Prescott county.	Welland Peat Bog. Tps. of Wainfleet and Hum- berstone, Welland county.	Newington Peat Bog. Tps. of Osnaburgh, Roxborough, and Cornwall, Stormont county.	Perth Peat Bog. Tp. of Drummond, near Perth.	Victoria Road Peat Bog. Tps. of Bexley and Carden, Victoria county.
Total area of bog.....	5,004	6,800	4,900	3,800	3,800	67
Workable area 5 feet and over in depth.....	3,440	5,414	3,465	2,913	3,162	31
Area of maximum average depth.	347 acres, 16 ft. deep.	1,014 acres, 16½ ft. deep.	588 acres, 11 ft. deep.	120 acres, 26 ft. deep.	106 acres, 16 ft. deep.	3 acres, 15 ft. deep.
Volume of workable peat.....	38,442,494	70,270,200	30,796,480	46,566,478	38,445,222	402,441
Tons of fuel, with contents, 25 per cent moisture.....	5,125,655	9,369,000	4,106,000	6,208,800	5,126,000	53,000
Average partial analysis of absolutely dry peat.....	25.35 67.44 7.37	25.39 68.42 6.18	25.20 69.52 5.28	26.27 68.04 5.69	24.97 70.92 4.10	25.18 69.52 5.30
	{	{	{	{	{	{
	Cub. yds.	Cub. yds.	Cub. yds.	Cub. yds.	Cub. yds.	Cub. yds.
	{	{	{	{	{	{
	Fixed carbon.	Fixed carbon.	Fixed carbon.	Fixed carbon.	Fixed carbon.	Fixed carbon.
	{	{	{	{	{	{
	Vol. matter.	Vol. matter.	Vol. matter.	Vol. matter.	Vol. matter.	Vol. matter.
	{	{	{	{	{	{
	Ash.	Ash.	Ash.	Ash.	Ash.	Ash.

* See Bulletin No. 1 (2nd Edition) Investigation of Peat Bogs, 1908-9, issued by Mines Branch, Department of Mines, Ottawa.

For the purpose of demonstrating the industrial applicability of peat fuel, the Mines Branch is at present erecting a testing plant, where peat will be used in gas producers for generating power. Any owners wishing to have their peat bog investigated and reported upon can communicate on the subject with the Director of the Mines Branch.

Moreover, it may be mentioned that the Mines Branch has secured, by purchase, part of the Alfred bog, which will be worked for the purpose of demonstration, and also for supplying peat fuel to the testing plant at Ottawa.

GRAPHITE.

Statistics of graphite production include both the ore sold crude and the graphite refined and sold as such. In 1907 the total shipments were 579 tons valued at \$16,000, comprising 459 tons of ore valued at \$11,000, and 120 tons of refined product valued at \$5,000. In 1908 the shipments totalled $251\frac{1}{4}$ tons valued at \$5,565, of which 250 tons valued at \$5,400 were crude, and $1\frac{1}{4}$ tons valued at \$165 were refined.

Statistics of annual production since 1886 are shown in Table 1.

GRAPHITE.—TABLE 1.
Annual Production.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	500	4,000	1898.....		13,698
1887.....	300	2,400	1899.....	1,130	24,179
1888.....	150	1,200	1900.....	1,922	31,040
1889.....	242	3,160	1901.....	2,210	38,780
1890.....	175	5,200	1902.....	1,095	28,300
1891.....	260	1,560	1903.....	728	23,745
1892.....	167	3,763	1904.....	452	11,760
1893.....	Nil.	Nil.	1905.....	541	16,735
1894*.....	3	223	1906.....	387	18,300
1895.....	220	6,150	1907.....	579	16,000
1896.....	139	9,455	1908.....	$251\frac{1}{4}$	5,565
1897.....	436	16,240			

*Exports.

The exports of graphite are shown in Table 2. The record for 1908 indicates an exportation of graphite to the value of \$11,034, which probably includes some ore returned by the mines as having been shipped in 1907. The total imports of graphite as shown in Table 3 were valued at \$83,592 in 1908, as compared with \$60,833 in 1907.

GRAPHITE.—TABLE 2.

Exports of Graphite.

Year.	Crude.		Manufactures.	Total Value.
	Tons.	Value.	Value.	
1886.....		\$	\$	\$
1887.....				3,586
1888.....				3,017
1889.....				1,080
1890.....				538
1891.....				1,529
1892.....				72
1893.....				3,952
1894.....	1	38	10	48
1895.....	3	223		223
1896.....	544	4,803	30	4,833
1897.....	136	9,126	354	9,480
1898.....	205	2,988	1,337	4,325
1899.....	591	11,527	1,571	13,098
1900.....	1,237	19,326	3,164	22,490
1901.....	1,550	40,132	6,065	46,197
1902.....	1,194	30,535	4,567	35,102
1903.....	886	23,097	1,742	24,839
1904.....	412	26,230	17,412	43,642
1905.....	177	9,609	6,958	16,567
1906.....	254	7,596	518	8,114
1907.....	106	2,468	5,274	7,742
1908.....	121	3,036	2,847	5,883
	385	10,158	876	11,034

GRAPHITE.—TABLE 3.

Imports of Raw and Manufactured Graphite.

Fiscal Year.	Plumbago not ground.	Black Lead.	Ground and Manufactures.	Crucibles, Clay or Plumbago.	Total.
	\$	\$	\$		\$
1880.	1,677	18,055	2,738	.....	22,470
1881.	2,479	26,544	1,202	.....	30,225
1882.	1,028	25,132	2,181	.....	28,341
1883.	3,147	21,151	2,141	.....	26,439
1884.	2,891	24,002	2,152	.....	29,045
1885.	3,729	24,487	2,805	.....	31,021
1886.	5,522	23,211	1,408	.....	30,141
1887.	4,020	25,766	2,830	.....	32,616
1888.	3,802	7,824	22,604	.....	34,230
1889.	3,546	11,852	21,789	.....	37,187
1890.	3,441	10,276	26,605	.....	40,322
1891.	7,217	8,292	26,201	.....	41,710
1892.	2,988	13,560	23,085	.....	39,633
1893.	3,293	16,595	23,051	.....	42,939
1894.	2,177	17,614	15,196	1,490	36,477
1895.	2,586	13,922	16,361	5,627	38,496
1896.	2,865	18,434	12,090	7,407	40,796
1897.	1,406	17,863	14,768	5,906	39,943
1898.	1,862	19,638	20,120	12,533	54,153
1899.	4,979	21,334	22,140	14,350	62,803
1900.	4,437	22,078	17,869	20,571	64,955
1901.	2,357	25,646	11,016	38,874	77,893
1902.	3,649	20,467	15,021	28,635	67,772
1903.	2,870	22,559	12,493	34,624	72,546
1904.	1,802	26,053	12,737	28,773	69,365
1905.	2,499	30,743	13,192	31,353	77,787
1906.	2,791	33,907	19,058	32,950	88,706
1907 (9 mos.)....	3,176	16,646	13,740	27,271	60,833
1908.	3,030	9,042	31,428	40,092	83,592

In 1906 the Canada Paint Co., as usual, shipped a small quantity of graphite from their property near Havelock, N. B. The Calumet Mining & Milling Graphite Co. did no work on their graphite property at Calumet, Que., during the year. In the Buckingham district the development of the Bell mines on the west half of lot 2, range V, was continued by Cosmo Kendall, and a small shipment of mill products made. In this district also the Natal Graphite Mining & Milling Company was doing development work on lot 3, range IV of Buckingham township.

In Ontario the Ontario Graphite Co. leased the Black Donald mine in February to the Black Donald Graphite Co., Ltd., Calabogie, Ont. The greater part of the year was spent in overhauling and refitting the entire plant in all its departments. At the close of the year this Company was capable of producing four tons per day of refined graphite in about 8 different grades, with every facility for doubling this capacity when required.

The Globe Refining Company did some mining on lots 21 and 22 in concession VI of Elmsley, county of Lanark, but no shipments were made.

Artificial Graphite :—The manufacture of artificial graphite in electric furnaces has been carried on for some years at Niagara Falls, New York, by the International Acheson Graphite Company. A small plant has now been established on the Canadian side of the river at Niagara Falls, Ont., and the quantity of artificial graphite made during 1906 is reported by the manufacturers as 445,047 pounds.

In 1907 the quantity made was 407,779 pounds. and in 1908, 428,540 pounds.

GYPSUM.

There was a considerable falling off in the quantity of gypsum mined in Canada in 1908, due no doubt in a large measure to the general business depression of the year. The chief centres of production are in the Provinces of Nova Scotia and New Brunswick, the output from which finds a market mainly in the New England states. Small quantities are also mined in Ontario and Manitoba for home consumption.

A very large part of the gypsum mined is shipped in lump form as quarried, to calcining mills in the United States. From 5,000 to 10,000 tons are ground for use as land plaster, etc., while the balance, about 10 per cent, is calcined in Canada for the manufacture of plaster of Paris, wall plaster, and other products. Crude gypsum is also used in the manufacture of Portland cement.

The total quantity of gypsum mined and the quantity calcined during the past four years are shown hereunder.

Year.	Total Gypsum mined.	Gypsum calcined.
	Tons.	Tons.
1905.....	443,569	26,855
1906.....	492,759	28,831
1907.....	489,962	34,752
1908.....	375,444	48,727

The total value of the sales of gypsum products in 1908, including calcined and crude, was \$575,701, representing 340,964 tons of material, as compared with a value of \$646,914 and a tonnage of 485,921 in 1907.

Detailed statistics of the production and sales during the past four years of crude, crude ground, and calcined gypsum are shown in Table 1 ; while the total annual sales of gypsum products since 1886 are shown in Table 2, and the sales by provinces in Table 3.

GYPSUM.—TABLE 1.

Sales and Shipments of Crude, Ground, and Calcined Gypsum, 1905-1908

	Crude (lump).			Crude Ground.		
	Tons.	Value.	Per ton.	Tons.	Value.	Average per ton.
1905.....	412,155	\$ 409,146	\$ cts. 0 99	3,255	\$ 8,779	\$ cts. 2 70
1906.....	442,132	473,960	1 07	3,195	9,823	3 07
1907.....	454,668	473,831	1 04	6,732	16,268	2 42
1908.....	298,188	307,532	1 03	9,504	25,468	2 68

	Calcined.			Total Sales.		
	Tons.	Value.	Per ton.	Tons.	Value.	Average per ton.
1905.....	26,748	\$ 168,243	\$ cts. 6 29	442,158	\$ 586,168	\$ cts. 1 32
1906.....	23,695	159,511	6 73	469,022	643,294	1 37
1907.....	24,521	156,815	6 40	485,921	646,914	1 33
1908.....	33,272	242,701	7 29	340,964	575,701	1 69

GYPSUM.—TABLE 2.

Annual Production of Gypsum Products.

Calendar Year.	Tons.	Value.	Average per ton.	Calendar Year.	Tons.	Value.	Average per ton.
1886.....	162,000	\$ 178,742	\$ cts. 1 10	1898.....	219,256	\$ 232,515	\$ cts. 1 06
1887.....	154,008	157,277	1 02	1899.....	214,566	257,329	1 05
1888.....	175,887	179,393	1 01	1900.....	252,101	259,009	1 02
1889.....	213,273	205,108	0 96	1901.....	293,799	340,148	1 16
1890.....	226,509	194,033	0 86	1902.....	333,599	379,479	1 14
1891.....	203,605	206,251	1 01	1903.....	314,489	388,459	1 24
1892.....	241,048	241,127	1 00	1904.....	343,961	373,474	1 08
1893.....	192,568	196,150	1 02	1905.....	442,158	586,168	1 32
1894.....	223,631	202,031	0 90	1906.....	469,022	643,294	1 37
1895.....	226,178	202,608	0 89	1907.....	485,921	646,914	1 33
1896.....	207,032	178,061	0 86	1908.....	340,964	575,701	1 69
1897.....	239,691	244,531	1 02				

GYPSUM.—TABLE 3.
Annual Production by Provinces.

Calendar Year.	NOVA SCOTIA.		NEW BRUNSWICK.		ONTARIO.		MANITOBA.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1887.....	116,346	116,346	29,102	29,216	8,560	11,715		
1888.....	124,818	120,429	44,369	48,764	6,700	10,200		
1889.....	165,025	142,850	40,866	49,130	7,382	13,128		
1890.....	181,285	154,972	39,024	30,986	6,200	8,075		
1891.....	161,934	153,955	36,011	33,996	5,660	18,300		
1892.....	197,019	170,021	39,709	65,707	4,320	5,399		
1893.....	152,754	144,111	36,916	41,846	2,898	10,193		
1894.....	168,300	147,644	52,962	48,200	2,369	6,187		
1895.....	156,809	133,929	66,949	63,839	2,420	4,840		
1896.....	136,590	111,251	67,137	59,024	3,305	7,786		
1897.....	155,572	121,754	82,658	118,116	1,461	4,661		
1898.....	132,086	106,610	86,083	121,704	1,087	4,201		
1899.....	126,754	102,055	116,792	151,296	1,020	3,978		
1900.....	138,712	108,828	112,294	145,850	1,095	4,331		
1901.....	170,100	136,947	121,595	189,709	1,504	5,692	600	7,800
1902.....	206,087	181,425	124,041	170,153	1,917	7,699	1,554	20,202
1903.....	189,427	173,881	119,182	172,080	2,720	21,988	3,160	20,510
1904.....	218,580	153,600	190,991	187,524	2,390	18,350	4,000	14,000
1905.....	272,252	298,248	163,553	232,586	1,853	23,834	4,500	31,500
1906.....	333,312	345,414	131,246	250,960	2,965	24,420	3,200	22,500
1907.....	357,411	380,859	118,106	213,638	10,404	52,417		
1908.....	234,455	230,433	81,620	191,312	10,389	42,456	14,500	111,500

Statistics of exports and imports of gypsum as compiled from the reports of Trade and Navigation are shown in Tables 4, 5, and 6. The annual exports of crude gypsum, which are almost altogether from the Maritime provinces, are shown in Table 4. There is a small export of ground gypsum, the annual value of which is shown in Table 5. The imports of gypsum shown in Table 6 have until the past three or four years been comparatively small; however, during these years there has been a considerable increase in the imports of crude gypsum and of plaster of Paris.

GYPSUM.—TABLE 4.
Exports of Crude Gypsum.

Calendar Year.	NOVA SCOTIA.		NEW BRUNSWICK.		ONTARIO.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
		\$		\$		\$		\$
1874	67,830	68,164					67,830	68,164
1875	86,065	86,193	5,420	5,420			91,485	91,613
1876	87,720	87,590	4,925	6,616	120	180	92,765	94,386
1877	106,950	93,867	5,030	5,030			111,980	98,897
1878	88,631	76,695	16,335	16,435	489	675	105,455	93,805
1879	95,623	71,353	8,791	8,791	579	720	104,993	80,864
1880	125,685	111,833	10,375	10,987	875	1,240	136,935	124,060
1881	110,303	100,284	10,310	15,025	657	1,040	121,270	116,349
1882	133,426	121,070	15,597	24,581	1,249	1,946	150,272	147,597
1883	145,448	132,834	20,242	35,557	462	837	166,152	169,228
1884	107,653	100,446	21,800	32,751	688	1,254	130,141	134,451
1885	81,887	77,898	15,140	27,730	525	787	97,552	106,415
1886	118,985	114,116	23,498	40,559	350	538	142,833	155,213
1887	112,557	106,910	19,942	39,295	225	337	132,724	146,542
1888	124,818	120,429	20	50	670	910	125,508	121,389
1889	146,204	142,850	31,495	50,862	483	692	178,182	194,404
1890	145,452	139,707	30,034	52,291	205	256	175,691	192,254
1891	143,770	140,438	27,536	41,350	5	7	171,311	181,795
1892	162,372	157,463	27,488	43,623			189,860	201,086
1893	132,131	122,556	30,061	36,706			162,192	159,262
1894	119,569	111,586	40,843	46,538			160,412	158,124
1895	133,369	125,651	56,117	67,593			189,486	193,244
1896	116,331	109,054	64,946	77,535			181,277	186,589
1897	122,934	116,665	66,222	80,485			189,206	197,150
1898	99,215	93,474	70,399	81,433			169,614	174,907
1899	104,795	99,984	96,831	198,094	* $\frac{1}{2}$	12	201,626	208,090
1900							188,262	201,912
1901							236,247	231,594
1902							289,600	295,215
1903							287,496	311,580
1904							298,211	316,436
1905							359,246	388,474
1906							404,464	462,814
1907							375,026	424,794
1908							280,091	324,574

* Exported from British Columbia.

GYPSUM.—TABLE 5.
Exports of Ground Gypsum.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1890	105	1897	6,763	1903	12,457
1891	588	1898	6,448	1904	2,333
1892	20,255	1899	8,123	1905	2,673
1893	22,132	1900	19,834	1906	2,934
1894	20,054	1901	15,337	1907	557
1895	22,233	1902	5,101	1908	9,765
1896	21,267				

GYPSUM.—TABLE 6.

Imports of Gypsum, etc.

Fiscal Year.	Crude Gypsum.		Ground Gypsum		Plaster of Paris.	
	Tons.	Value.	Lbs.	Value.	Lbs.	Value.
		\$		\$		\$
1880.....	1,854	3,203	1,606,578	5,948	667,676	2,376
1881.....	1,731	3,442	1,544,714	4,676	574,006	2,864
1882.....	2,132	3,761	759,460	2,576	751,147	4,184
1883.....	1,384	3,001	1,017,905	2,579	1,448,650	7,867
1884.....		3,416	687,432	1,936	782,920	5,226
1885.....	1,353	2,354	461,400	1,177	689,521	4,809
1886.....	1,870	2,429	224,119	675	820,273	5,463
1887.....	1,557	2,492	13,266	73	594,146	4,342
1888.....	1,236	2,193	106,068	558	942,338	6,662
1889.....	1,360	2,472	74,390	372	1,173,996	8,513
1890.....	1,050	1,928	434,400	2,136	693,435	6,004
1891.....	376	640	36,500	215	1,035,605	8,412
1892.....	626	1,182	310,250	2,149	1,166,200	5,595
1893.....	496	1,014	140,830	442	552,130	3,143
1894.....		1,660	23,270	198	422,700	2,386
1895.....	603	960	20,700	88	259,200	1,619
1896.....	1,045	848	64,500	198	297,000	2,000
1897.....		772	45,000	123	969,900	4,489
1898.....	1,147	1,742	35,700	293	329,600	2,025
1899.....	325	692	33,900	338	496,300	3,120
1900.....	77	958	6,300	69	849,100	6,492
1901.....	286	1,125	65,400	1,097	502,200	3,978
1902.....	541	1,697	56,700	249	475,300	2,641
1903.....	1,076	2,187	68,700	228	630,800	3,599
1904.....	249	663	106,800	559	625,100	2,885
1905.....	2,344	7,386	2,255,700	2,681	7,924,100	37,643
1906.....	6,332	22,008	1,968,690	1,799	12,866,500	43,742
1907 (9 mos.).....	9,189	23,410	609,690	1,619	19,849,400	58,364
1908.....	9,393	36,510	382,500	1,781	15,020,000	51,328

Crude gypsum, duty free. Ground gypsum, duty 15 per cent. Plaster of Paris, duty 12½c. per 100 lbs.

In Nova Scotia the total quantity of crude gypsum mined in 1908 was 254,540 tons, as compared with 351,611 tons in 1907. Of the total in 1908 about 87 per cent was mined from quarries in Hants county at Windsor, Walton, Cheverie, Noel, etc., the balance being quarried at St. Anns, Victoria county, and Cheticamp, Inverness county.

At Cheticamp the Great Northern Mining Co., Ltd., under the management of M. W. Grandin, commenced operations in 1908. A mill was built, but the Company did not begin to grind gypsum until the latter part of September or to manufacture plaster of Paris until the middle of October. All goods manufactured were for the ports on the St. Lawrence, and shipments ceased on the close of navigation. The Victoria Gypsum Mining and Manufacturing Co. carried on operations as usual at St. Anns, but with a somewhat reduced output.

The Nova Scotia Cement and Plaster Co., Ltd., was organized to work deposits at Port Hastings in Inverness, but nothing was done further than to strip the surface covering from the deposit.

In Hants county the principal operators were the Wentworth Gypsum Co., Ltd., the Windsor Gypsum Co., and Albert Parsons. Shipments were made also by the Newport Plaster Mining and Manufacturing Co., the Windsor Plaster Co. which operates a small mill, the Noel Plaster Co. (W. B. O'Brien), and Lorenzo Ettinger.

In the Province of New Brunswick the principal shipper is the Albert Manufacturing Company of Hillsborough. In addition to shipping a large tonnage of crude gypsum this Company operated a large mill for the manufacture of plaster of Paris, shipping its product throughout Canada. The Hillsboro Plaster Co. also operates a quarry at Hillsborough, and from the Tobique River deposits in Victoria county a small quantity of gypsum is annually quarried by John E. Stewart of Andover, N.B. The total quantity of crude gypsum mined in New Brunswick in 1908 was 90,015 tons.

In Ontario 10,889 tons of crude were reported as having been mined in 1908. The Alabastine Company of Paris sells gypsum, crushed and ground, and manufactures plaster of Paris, and special wall finishes under the name alabastine. The Imperial Plaster Co. of Toronto quarried gypsum for its own use at Cayuga, while the Crown Gypsum Co., Ltd., built a crushing and calcining mill at York mines, Oneida township, and commenced to open up the properties formerly known as the Martindale, Taylor, and Donaldson mines.

The only operator in Manitoba is the Manitoba Gypsum Co. of Winnipeg. This Company has a mill and calcining works at Winnipeg, while the quarry is situated at the north end of Lake Manitoba. The Company has a narrow gauge railway of its own from the mine to Lake Manitoba, and a small fleet of steamers and barges which bring the raw material from the head of the lake to Totogan, from which point it is brought to Winnipeg on the Canadian Northern railway.

MANGANESE.

In the decade between 1880 and 1890 the manganese industry was a comparatively important one in Canada, when deposits were worked in New Brunswick and Nova Scotia, but for some years past the production has diminished to such an extent that the industry is at present practically abandoned.

Except for the years 1903 and 1904 no direct returns of production have been received since 1900, and the figures which appear in the table of production represent exports published by the Customs Department; the ore having probably been obtained from working over old dumps of ore which had accumulated at the mines.

In 1907 the Customs reports show exports of only one ton of manganese, and in the absence of more data this has been taken as the production. In 1908 neither exports nor production were recorded.

MANGANESE. TABLE 1.

Annual Production.

Calendar Year.	Tons.	Value.	Value. per ton.	Calendar Year.	Tons.	Value.	Value. per ton.
		\$	\$ cts.			\$	\$ cts.
1886.....	1,789	41,499	23 20	1898.....	50	1,600	32 00
1887.....	1,245	43,658	35 07	1899.....	1,581	20,004	12 65
1888.....	1,801	47,944	26 62	1900.....	30	1,800	60 00
1889.....	1,455	32,737	22 50	1901*	440	4,820	10 95
1890.....	1,328	32,550	24 51	1902*	172	4,062	23 62
1891.....	255	6,694	26 25	1903.....	91	2,775	30 49
1892.....	115	10,250	89 13	1904.....	66	2,740	41 51
1893.....	213	14,578	68 44	1905*	22	1,720	78 18
1894.....	74	4,180	56 48	1906*	93	925	9 95
1895.....	125	8,464	67 71	1907*	1	22	22 00
1896*	123½	3,975	32 19	1908.....			
1897*	15¼	1,166	76 46				

* Exports.

MANGANESE.—TABLE 2.

Exports of Manganese (re.

Calendar Year.	NOVA SCOTIA.		NEW BRUNSWICK.		TOTAL.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
1873.		\$		\$		\$
1874.	6	12	1,031	20,192	1,031	20,192
1875.		200	776	16,961	782	16,973
1876.	21	723	194	5,314	205	5,514
1877.	106	3,699	391	7,316	412	8,039
1878.	106	4,889	785	12,210	891	15,909
1879.	154	7,420	520	5,971	626	10,860
1880.	79	3,090	1,732	20,016	1,886	27,436
1881.	200	18,022	2,100	31,707	2,179	34,797
1882.	123	11,520	1,504	22,532	1,704	40,554
1883.	313	8,635	771	14,227	894	25,747
1884.	134	11,054	1,013	16,708	1,326	25,343
1885.	77	5,054	469	9,035	603	20,089
1886.	(a) 441	30,854	1,607	29,595	1,684	34,649
1887.	578	14,240	1,377	27,484	(a) 1,818	58,338
1888.	87	5,759	837	20,562	1,415	34,802
1889.	59	3,024	1,094	16,073	1,181	21,832
1890.	177	2,583	1,377	26,326	1,436	29,350
1891.	22	563	1,729	34,248	1,906	36,831
1892.	84	6,180	233	6,131	255	6,694
1893.	123	12,409	59	2,025	143	8,205
1894.	11	720	10	112	133	12,521
1895.	108	6,348	45	2,400	56	3,120
1896.	123 ¹ / ₂	3,975	1 ³ / ₁₀	3	108 ³ / ₁₀	6,351
1897.	15 ¹ / ₄	1,166			123 ¹ / ₂	3,975
1898.	11	325			15 ¹ / ₄	1,166
1899.	67	2,328			11	325
1900.			3	82	70	2,410
1901.					34	1,720
1902.					440	4,820
1903.					172	4,062
1904.					135	1,889
1905.					123	2,706
1906.					22	1,720
1907.					93	925
1908.					1	22

(a) 250 tons from Cornwallis should more correctly be classed under the heading of mineral pigments.

MANGANESE.—TABLE 3.

Imports:—Oxide of Manganese.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1884.....	3,989	253	1897.....	70,663	2,741
1885.....	36,778	1,794	1898.....	130,456	5,047
1886.....	44,967	1,753	1899.....	141,356	5,539
1887.....	59,655	2,933	1900.....	126,725	4,155
1888.....	65,014	3,022	1901.....	272,134	8,176
1889.....	52,241	2,182	1902.....	476,331	5,360
1890.....	67,452	3,192	1903.....	279,611	8,051
1891.....	92,087	3,743	1904.....	275,696	7,051
1892.....	76,097	3,530	1905.....	235,289	6,832
1893.....	94,116	3,696	1906.....	244,620	5,508
1894.....	101,863	4,522	1907 (9 mos).....	386,404	11,087
1895.....	64,151	2,781	1908.....	732,242	17,863
1896.....	108,590	4,075			

The decline of the manganese industry has not been due to the lack of deposits in Canada, for in both Nova Scotia and New Brunswick there are mines which were worked for years and from which large quantities could still be extracted. The main market for these ores would, of course, be the United States, this country having to rely to a large extent on imports of manganese ores to supply the wants of the steel industry. The imports of this nature into the United States amount annually to about 200,000 tons, valued approximately at \$1,750,000. These come mainly from British India and from Brazil, although some Russian, French, Japanese, and Cuban ores are also imported. It may be interesting to note that the United States Steel Corporation require that the manganese ore which they buy contain 49 per cent metallic manganese, a maximum of 8 per cent silica, and a maximum of 0.25 per cent phosphorus. All ores which do not come up to that standard are penalized.

MICA.

The mining of mica in Canada is at present confined to the western part of the Province of Quebec and the eastern part of Ontario. In the former Province deposits of mica are being worked in the region to the north of the city of Ottawa, in the townships of Buckingham, Templeton, Hull, and Wakefield. In Ontario there are mica mines in the townships of North Burgess and South Sherbrooke, in Lanark county; South Burgess, in the county of Leeds; in the townships of Bedford and Loughborough in Frontenac county. Practically all the mica mined in Canada is of the amber variety, and is used as insulating material in the manufacture of electrical apparatus. The principal foreign market of Canadian mica is the United States; an appreciable part of the production is consumed in Canada, and a proportion which is increasing steadily finds its way to Great Britain and other European markets, where it comes into competition with mica from India and other countries.

As has been remarked in previous reports, the annual statistics of production of mica which have been published in the past have been somewhat unsatisfactory, for numerous reasons. The value of the mica varies greatly according to the preparation which it has undergone, of which there are several stages not well defined between the rough cobbled condition at the mine, and the prepared and selected mica as it leaves the trimming factory, and the returns received are not always specific as to which value is adopted. There are, moreover, a great number of small operators, who work deposits intermittently according to the conditions of the mica market, and it is very difficult to obtain complete returns from these.

In 1907, the demand for mica was very active, and the production reached a total value of \$312,599, which is the highest yet recorded since the beginning of the industry. In 1908, however, there was a marked reaction, prices fell somewhat, the market was not as favourable as during the previous year, and as a result many of the smaller operators discontinued operations temporarily, and the value of the production fell to \$139,871. In the figures for 1907 it is very probable that the returns received comprise mica which had undergone further preparation than the rough cobbing at the mine, and to which higher values had been ascribed. In the figures for 1908 an effort was made to collect figures of production on a more uniform basis, and this contributed to some extent to the decrease in the total value. Moreover, some operators report that they stored comparatively large quantities of mica mined during 1908, waiting for better prices to dispose of them.

The following tabulations give the statistics of the mica mining industry for the years 1907 and 1908 as made up from returns received from producers.

Mica reported as shipped during 1907.

Province.	Tons.	Value.	Value per ton.
		\$	\$ cts.
Quebec	318	224,197	705 02
Ontario ..	456	88,402	193 86
Total	774	312,599	403 86

Mica, rough and thumb trimmed, reported as shipped during 1908.

Province.	Tons.	Value.	Value per ton.
		\$	\$ cts.
Quebec	148	82,613	558 20
Ontario	288	57,258	198 81
Total	436	139,871	320 80

Mica, rough culled, reported as mined during 1908.

Province.	Tons.	Value.	Value per ton.
		\$	\$ cts.
Quebec	543	130,152	239 96
Ontario	357	72,210	202 28
Total	900	202,362	224 84

The following table gives the mica production of Canada since 1886. For 1908 the quantity reported as actually shipped has been adopted as production.

MICA.—TABLE 1.
Annual Production.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1886.....	29,008	1894.....	45,581	1902.....	135,904
1887.....	29,816	1895.....	65,000	1903.....	177,857
1888.....	30,207	1896.....	60,000	1904.....	160,777
1889.....	28,718	1897.....	76,000	1905.....	178,235
1890.....	68,074	1898.....	118,375	1906.....	303,913
1891.....	71,510	1899.....	163,000	1907.....	312,599
1892.....	104,745	1900.....	166,000	1908.....	139,871
1893.....	75,719	1901.....	160,000		

Table 2 following gives the exports of mica from Canada since 1887, as given by the Trade and Navigation Reports of Canada.

MICA.—TABLE 2.
Exports.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Tons.	Value.
	\$		\$			\$
1887.....	3,480	1894.....	38,971	1902.....		391,812
1888.....	23,563	1895.....	48,525	1903.....		196,020
1889.....	30,597	1896.....	47,756	1904.....		198,482
1890.....	22,468	1897.....	69,101	1905.....		179,049
1891.....	37,590	1898.....	110,507	1906.....	912	581,919
1892.....	86,562	1899.....	153,002	1907.....	558	422,172
1893.....	70,081	1900.....	146,750	1908.....	290	198,839
		1901.....	152,553			

The exports for the calendar year 1908 were made up as follows:—

Exports of Canadian mica by countries.

To Great Britain.....	\$ 81,050
To United States.....	115,005
To other countries.....	2,784
	<u>\$ 198,839</u>

Table 3 gives the statistics of imports of Canadian mica into the United States since 1895, as published in the Foreign Commerce and Navigation of the United States. These figures are for the fiscal years ending June 30.

For the purpose of illustrating the relative importance of the imports of Canadian mica into the United States, as compared with those from other countries which also supply part of the mica consumed in the United States, the following table is given:—

MICA.—TABLE 3.

Imports of Mica into the United States.*

Year ending June 30.	Imports from Canada.		Total Imports from all Countries.	
	Tons.	Value.	Tons.	Value.
		\$		\$
1895.....	273	39,637	410	127,515
1896.....	310	57,908	632	214,997
1897.....	208	54,630	441	187,845
1898.....	233	53,854	313	94,294
1899.....	512	131,310	808	259,228
1900.....	549	136,981	1,019	314,882
1901.....	484	161,741	1,011	369,644
1902.....	427	184,287	903	384,818
1903.....	417	196,470	973	414,953
1904.....	287	137,191	693	306,937
1905.....	253	121,560	594	296,362
1906.....	539	328,991	1,206	731,484
1907.....	767	596,321	1,724	1,295,606
1908.....	172	140,166	655	567,550

* The Foreign Commerce and Navigation of the United States.

MINERAL PIGMENTS.

Under this heading are included the production of ochres and of barytes.

OCHRES.

It may be remarked here that all of the ochres mined are not used for the manufacture of paint. A certain proportion is shipped in the crude state to gas companies, where it is used for the purification of illuminating gas. The ochres for the manufacture of paints are as a rule calcined and ground on the spot and shipped after having undergone this preliminary preparation.

For the last seven years the production of ochres has not shown much variation, the value having varied between \$25,000 and \$36,000. In 1907, returns received show a production of 5,828 tons valued at \$35,570; whereas in 1908, there is a decrease to record, the figures being for that year 4,746 tons valued at \$30,440.

MINERAL PIGMENTS.—TABLE 1.

Annual Production of Ochres and Iron Oxides.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	350	2,350	1898.....	2,226	17,450
1887.....	485	3,733	1899.....	3,919	20,000
1888.....	397	7,900	1900.....	1,966	15,398
1889.....	794	15,280	1901.....	2,233	16,735
1890.....	275	5,125	1902.....	4,955	30,495
1891.....	900	17,750	1903.....	6,266	32,760
1892.....	390	5,800	1904.....	3,925	24,995
1893.....	1,070	17,710	1905.....	5,105	34,675
1894.....	611	8,690	1906.....	6,758	36,125
1895.....	1,339	14,600	1907.....	5,828	35,570
1896.....	2,362	16,045	1908.....	4,746	30,440
1897.....	3,905	23,560			

The working of ochre deposits is practically confined in Canada to one district situated between Champlain and Three Rivers, in the Province of Quebec, a short distance back from the shore of the St. Lawrence river.

Numerous other deposits of ochre are found in the Province of Quebec, but are not worked at present. In Ontario a small quantity of ochre was mined in 1907 from a deposit situated near Campbellville, but no production was reported in 1908.

The following are the firms which are mining ochres in Canada :—

Canada Paint Company, Montreal, Que.

Champlain Oxide Co., Three Rivers, Que.

Thos. H. Argall, Three Rivers, Que.

Ontario Mineral Paint Co., Campbellville, Ont.

The following tables give the statistics of the imports and exports of ochres.

MINERAL PIGMENTS.—TABLE 2.

Imports of Ochres.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	571,454	6,544	1895.....	793,258	12,048
1881.....	677,115	8,972	1896.....	1,159,494	16,954
1882.....	731,526	8,202	1897.....	1,504,044	18,504
1883.....	898,376	10,375	1898.....	2,126,592	26,307
1884.....	533,416	6,398	1899.....	2,444,698	31,092
1885.....	1,119,177	12,782	1900.....	2,474,537	32,017
1886.....	1,100,243	12,267	1901.....	2,092,067	27,267
1887.....	1,460,128	17,067	1902.....	2,530,743	33,909
1888.....	1,725,460	17,664	1903.....	3,215,346	42,243
1889.....	1,342,783	12,994	1904.....	2,767,580	36,636
1890.....	1,394,811	14,066	1905.....	3,122,690	35,887
1891.....	1,528,696	20,550	1906.....	4,321,530	57,397
1892.....	1,708,645	22,908	1907 9 months).....	2,926,528	39,675
1893.....	1,968,645	23,134	1908.....	3,749,132	39,923
1894.....	1,358,326	18,951			

	Duty.	1907.		1908.	
			\$		\$
Ochres and ochrey earths and raw siennas.....	20 %	1,256,546	15,194	1,751,036	18,042
Oxides, dry fillers, fire-proofs, umbers and burnt siennas N.E.S.....	25 %	1,669,982	24,481	2,018,096	21,881
Total.....		2,926,528	39,675	3,749,132	39,923

MINERAL PIGMENTS.—TABLE 3.

Exports of Mineral Pigments, Iron Oxides, etc.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1897.....	512	7,706	1903.....	676	12,770
1898.....	283	4,227	1904.....	416	7,260
1899.....	308	5,408	1905.....	353	7,704
1900.....	651	7,154	1906.....	139	2,379
1901.....	401	8,233	1907.....	191	10,043
1902.....	352	6,182	1908.....	125	4,850

BARYTES.

Barytes deposits are being worked in Nova Scotia, on the east side of Lake Ainslie, in Inverness county, and at Five Islands, Colchester county.

The figures of production of barytes show great variation from year to year, as shown by the following table, but as the consumption of this material is steadily increasing, the more constant demand will eventually result in a more even production.

MINERAL PIGMENTS.—TABLE 4.

Annual Production of Barytes.

Calendar Year.	Tons.	Value.	Average Value.	Calendar Year.	Tons.	Value.	Average Value.
		\$	\$ cts.			\$	\$ cts.
1885.	300	1,500	5 00	1897.	571	3,060	5 36
1886.	3,864	19,270	4 98	1898.	1,125	5,533	4 92
1887.	400	2,400	6 00	1899.	720	4,402	6 11
1888.	1,100	3,850	3 50	1900.	1,337	7,605	5 69
1889.				1901.	653	3,842	5 89
1890.	1,842	7,543	4 09	1902.	1,096	3,957	3 61
1891.				1903.	1,163	3,931	3 38
1892.	315	1,260	4 00	1904.	1,382	3,702	2 68
1893.				1905.	3,360	7,560	2 23
1894.	1,081	2,830	2 62	1906.	4,000	12,000	3 00
1895.				1907.	1,344	3,000	2 23
1896.	145	715	4 93	1908.	4,312	19,021	4 41

MINERAL PIGMENTS.—TABLE 5.

Imports of Barytes.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
		\$			\$
1880.	2,230	1,525	1886.		62
1881.	3,740	1,011	1887.	379	676
1882.	497	303	1888.	236	214
1883.		185	1889.	1,332	987
1884.		229	1890.	1,322	978
1885.	7	14			

The greater part of the barytes produced in Canada is exported to the United States, where an entrance duty of \$1.50 per ton is paid when it is in the unmanufactured state, and \$5.25 when manufactured.

The main use of barytes is as a cheapener of white paints, being used in combination with white lead, but it is also used in other industries, viz, in the manufacture of wall papers; for dressing calicoes; as loading material in rubber goods, and the various compounds of this element.

Besides the two deposits which are being worked there are numerous occurrences of barytes in Canada, some of which have been exploited, while others

have not been touched. Among the former may be mentioned the McKellar Island deposit on the north shore of Lake Superior, from which a considerable quantity has been extracted. The vein in which the barytes occurs here is said to be 45 feet wide, of which one-third consists of white barytes in bands of from 2 to 6 feet wide.

About four miles north of Kingston city, on the road to Elginburg, a very persistent vein of barytes is said to occur, ranging in width from a few inches to over 3 feet. The vein has been opened on lot 17, concession IV, Kingston township, and about 100 tons, mined at different times, have been taken to Kingston. There appear to be large quantities of material which, however, is somewhat impure.

In the Province of Quebec, in Hull township, lot 7, range X, four miles from the Gatineau river, a vein of barytes has been followed for 300 feet. It is from 2 to 4 feet in width and has been worked to depths of 20 feet.

In New Brunswick a certain amount of barytes has been extracted from a deposit situated one mile and a half east of Memramcook, in Westmorland county, but the material is reported to be rather impure.

In Nova Scotia deposits of barytes have been worked or are being worked at Lake Ainslie and Cheticamp in Inverness county; near River John, Pictou county; at Five Islands and in Stewiacke valley, east of Brookfield station in Colchester county.

MINERAL WATERS.

It is very difficult to arrive at accurate figures as regards the production of natural waters in Canada. In many places where mineral springs occur hotel and health resorts have been established, where there is a large consumption of mineral waters for drinking and bathing purposes, and it is practically impossible to obtain accurate figures of quantity or value of waters thus used. In previous years it was evident that the returns received did not represent the full share of the contribution of the mineral waters industry to the grand total of Canada's mineral production. To make up for this deficiency more or less arbitrary values were added to the total of returns received, but such methods are only approximate and always unsatisfactory.

In 1907 and 1908, efforts were made to collect fuller statistics of this product; it was decided to disregard the value of waters used for drinking and bathing purposes at the resorts, and to collect figures representing the value of such waters as actually found their way to the market, either in bulk or bottled.

Therefore, the figures for 1907 and 1908 are derived from the compilation of actual returns received. While they are not complete and certainly do not represent the full value of the products of this industry, it was thought advisable to give them thus, rather than add more or less arbitrary quantities based on mere approximations.

MINERAL WATERS.—TABLE 1.
Annual Production.

Calendar Year.	Gals.	Value.	Calendar Year.	Gals.	Value.	Calendar Year.	Gals.	Value.
		\$			\$			\$
1888.....	124,850	11,456	1895.....	739,382	126,048	1902.....		100,000
1889.....	424,600	37,360	1896.....	706,372	111,736	1903.....		100,000
1890.....	561,165	66,031	1897.....	749,691	141,477	1904.....		100,000
1891.....	427,485	54,268	1898.....	555,000	100,000	1905.....		100,000
1892.....	640,330	75,348	1899.....		100,000	1906.....		100,000
1893.....	725,096	108,347	1900.....		75,000	1907.....		136,020
1894.....	767,460	110,040	1901.....		100,000	1908.....		151,953

Table 2 presents the value of the imports of mineral waters for the fiscal year, as derived from the Customs returns.

MINERAL WATERS.—TABLE 2.

Imports.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880.....	41,797	1890.....	71,521	1900.....	30,343
1881.....	55,763	1891.....	15,721	1901.....	40,802
1882.....	57,953	1892.....	17,913	1902.....	91,871
1883.....	49,546	1893.....	27,909	1903.....	108,130
1884.....	48,613	1894.....	28,130	1904.....	137,304
1885.....	55,864	1895.....	27,879	1905.....	161,790
1886.....	47,006	1896.....	32,674	1906.....	178,639
1887.....	52,989	1897.....	22,142	1907 (9 months)...	143,416
1888.....	54,891	1898.....	33,314	1908.....	153,831
1889.....	66,331	1899.....	38,046		

	1907.		1908.	
	Gals.	\$	Gals.	\$
Mineral waters, natural, not in bottle. Duty free	6,106	1,237	5,265	600
Mineral and aerated waters..... " 20 %		142,179		153,231
Total		143,416		153,831

NATURAL GAS.

In 1907, natural gas was produced in the Provinces of Ontario, Alberta, and Quebec: production in the respective Provinces ranking in the order named.

In 1908, no production was reported from the Province of Quebec, hence Ontario and Alberta are responsible for the total output of that year.

The production of natural gas is greatly on the increase. After a period of depression—1901 and 1902—when the old Essex field along the border of Lake Erie became exhausted, the industry began to revive, owing to the discovery of new pools in Haldimand, Kent, and Essex counties. Since then, each year has shown a substantial increase over the preceding one.

NATURAL GAS.—TABLE 1.
Annual Production since 1892.

Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$
1892	150,000	1901	339,476
1893	376,233	1902	195,992
1894	313,754	1903	202,210
1895	423,032	1904	328,376
1896	276,301	1905	379,561
1897	325,873	1906	583,523
1898	322,123	1907	815,032
1899	387,271	1908	1,012,660
1900	417,094		

In 1907, the production of natural gas reached a total value of \$815,032; an increase of \$231,509, or 39.7 per cent, as compared with 1906. To this total the two main fields of Ontario, namely, the Welland and Haldimand fields, contributed about equal shares of 42 per cent each. About 10 per cent can be attributed to the fields in Kent, and Essex counties. Alberta and Quebec are responsible for 4½ per cent, and 1½ per cent respectively.

The development of the Haldimand field, which began producing only four years ago, and the new pools struck in Essex and Kent counties, were the most important factors in the increased production.

In 1908 there was a continuance of activity in the natural gas industry, and returns received show a total production valued at \$1,012,660. This is by far the largest figure ever recorded, and shows an increase of \$197,628, or 24.2 per cent, as compared with 1907; of \$429,137, or 73.5 per cent as compared with 1906; and of \$633,099, or 167 per cent as compared with 1905. Of the total for 1908, the Welland field contributed about 31 per cent; the Haldimand field, 51 per cent; the Essex and Kent fields, 11 per cent, and the Province of Alberta about 7 per cent.

The increase in the production is attributable to the expansion of the Haldimand field, as well as to increased production from all the other fields; with the exception of the Three Rivers field in the Province of Quebec, which became exhausted towards the end of 1907.

In connexion with this last field it may be interesting to quote the following extract from the annual report of the Superintendent of Mines of the Province of Quebec for 1907:—

‘In July, 1907, the gas wells operated by the Canadian Gas and Oil Co., whose office is now in Three Rivers, were visited.

‘The Company sank a certain number of wells in the vicinity of Louiseville, Yamachiche, and St. Barnabé, 13 of which struck gas in merchantable quantities. These wells begin with a diameter of 6 inch casing and generally strike gas at a depth of from 225 to 300 feet, that is in the neighbourhood of solid rock which seems, in that region, to be the Hudson River limestone that outcrops opposite Three Rivers on the other side of the River St. Lawrence. They pass through clay, fine sand, and gravel of variable thickness before striking the solid rock and gas. The Company has a boring plant and the work is done very rapidly. It has also sunk some testing wells: among others, one on the Yamachiche river, north of St. Barnabé, some twelve miles from the St. Lawrence. At the time of my visit it was 500 feet deep; it began directly on the Trenton limestone, 50 feet of which were pierced, then it met 200 feet of sandstone which seems to me to belong to the Potsdam formation; the remainder is Laurentian gneiss which is found at the northern end of the Trenton basin. This work was abandoned and another testing well begun farther south.

‘The producing wells are cased and connected with the distributing line. I examined several of these wells and found the pressure good.

‘The Company has laid down lines of pipes which supply gas to St. Barnabé, Yamachiche, and Louiseville, and in the summer of 1907 it completed a line of 8 inch pipe thirteen miles long for supplying gas in Three Rivers. It bought out the old gas company of that city and laid 6 inch pipes in the streets, which enables it to supply gas for heating and lighting at very low prices, which I mentioned in my previous report. The pressure in the city is reduced to four ounces.

‘The gas of this region is very good and is not sulphurous. As to duration, everybody knows that it is surface gas, and I estimate that, in order to find more lasting reservoirs, it will be necessary to bore deeper into the rock and locate the wells towards the south.

‘The fact must not be lost sight of that these reservoirs are not inexhaustible; that they should be dealt with sparingly, and preparations should be made for the future in case the gas should disappear.’

That the above remarks were opportune is shown by the fact that this gas field became exhausted before the end of 1907; and the Company had to discontinue the supply of gas to its subscribers.

The formations along the north shore of the St. Lawrence river are rather disturbed and broken; they are, therefore, not favourable to any large accumulation of gas in the rocks. In future operations in that region it would be well to make sure of a lasting supply of natural gas in the rocks before making large outlays for extensive systems of distribution.

In 1908, there were in Canada some 480 wells producing natural gas, distributed as follows: Welland field, 281; Haldimand field, 252; Kent and Essex fields, 35; Alberta, 12.

In the west, gas is reported to have been struck in merchantable quantities at Calgary, by the Calgary Natural Gas Company, after several years of persistent exploratory work. It is quite possible that in 1909 a production from the Calgary field will be recorded.

In Alberta, it is now proved that the existence of natural gas in commercial quantities is not confined to the city of Medicine Hat and immediate vicinity.

The Canadian Pacific railway, during the last few years, has been doing a great deal of drilling in search of oil and gas at various points in central Alberta, and has struck large flows of gas at Dunmore Junction, four miles east of Medicine Hat; at Suffield, some twenty-six miles northwest of that city; and at Bow Island, some forty miles southwest of the same point. At this last place it is reported that a flow of gas—estimated at 4,000,000 cubic feet per 24 hours—was struck at a depth of 1,900 feet. These occurrences may not, of course, prove that a continuous field exists between these points, and that natural gas would certainly be struck at any place between them, but it reveals a wide distribution, and an abundant supply of that almost ideal fuel.

That this fuel constitutes a very important asset in the regions where it exists, is proved by the repeated efforts put forth at different times by municipalities: groups of inhabitants interested in local industries, and consumers in Ontario, urging both provincial and federal governments to regulate the exports of natural gas from Canadian territories to the United States in such a way that only the surplus—after the Canadian consumers have been supplied—be allowed to be piped to cities across the border. In 1901, as a result of these numerous representations, the Ontario government cancelled the agreement granting permission to use the bed of the Detroit river to lay a pipe line to export the gas from the Essex field to Detroit, thus cutting off an outlet of export. Moreover, by the Supplementary Revenue Act of 1907, the same provincial government imposed a tax of 2 cents per thousand cubic feet on natural gas; 90 per cent of which tax is remitted when the gas is consumed in the Province. The gas allowed to go to waste is not subject to the remittance, but pays 2 cents per 1,000 feet, as in the case of gas exported.

It is also interesting to note the measures taken by the Dominion government in respect to the exportation of natural gas from Canadian fields. During the third session of the tenth Parliament, an Act was passed regulating the exporta-

tion of electric power, and certain liquids and gases. Of such importance commercially is this law, that it has been deemed advisable to reproduce it here in full.

6-7 EDWARD VII.—CHAP. 16.

AN ACT TO REGULATE THE EXPORTATION OF ELECTRIC POWER AND CERTAIN LIQUIDS AND GASES.

(Assented to 27th April, 1907.)

His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:—

1. This Act may be cited as *The Electricity and Fluid Exportation Act*.

2. In this Act, unless the context otherwise requires,—

(a) ‘export’ and ‘exportation,’ when used with reference to electrical power or energy, mean respectively export and exportation from Canada by lines of wire or other conductor, and when used with reference to petroleum, natural gas, water or other fluid, whether liquid or gaseous, capable of being exported, mean respectively export and exportation from Canada through pipe lines or other like contrivances;

(b) ‘power’ means electrical power or energy produced in Canada;

(c) ‘fluid’ means petroleum, natural gas, water or other fluid, whether liquid or gaseous, capable of being exported by means of pipe lines or other like contrivances, and produced in Canada.

3. No person shall export any power or fluid without a license, or any power or fluid in excess of the quantity permitted by his license, or otherwise than as permitted by such license; Provided that any person who, immediately prior to the passing of this Act, is lawfully engaged in the exportation of power or fluid shall not, with respect to such exportation, be subject to the provisions of this Act until six months after this Act comes into force or until he has sooner obtained a license under this Act, unless and except in so far as his exportation at any time during the interval ratably exceeds in quantity of power or fluid the amount which he was exporting prior to the passing of this Act.

(2). No person shall, without a license, construct or place in position any line of wire or other conductor for the exportation of power, or any pipe line or other like contrivance for the exportation of fluid.

4. Subject to any regulations of the Governor in Council in that behalf, the Governor in Council may grant licenses, upon such conditions as he thinks proper, for the exportation of power or fluid where a right to export exists by lawful authority; and such license shall be revocable upon such notice to the licensee as the Governor in Council deems reasonable in each case.

5. Any such license may provide that the quantity of power or fluid to be exported shall be limited to the surplus, after the licensee has supplied for distribution to customers for use in Canada, power or fluid to the extent defined by such

license, at prices and in accordance with conditions, rules and regulations prescribed by the Governor in Council.

(2). Every such license shall be revocable at will by the Governor in Council if the licensee refuses or neglects to comply with any of the conditions imposed with regard to the supply and distribution of power or fluid in Canada.

6. Subject to any regulations of the Governor in Council in that behalf, the Governor in Council may grant licenses for the construction, placing or laying of any line of wire or other conductor for the exportation of power, or of any pipe line or other like contrivance for the exportation of fluid.

7. Every person who exports any such power or fluid contrary to the provisions of this Act shall, for each day on which any such export takes place, be liable to a penalty not exceeding five thousand dollars and not less than one thousand dollars.

8. Every person who, contrary to the provisions of this Act, constructs, places or lays in position any line of wire or other conductor for the exportation of power, or any pipe line or other like contrivance for the exportation of fluid, shall for each such offence be liable to a penalty not exceeding five thousand dollars and not less than one thousand dollars, and to forfeiture and confiscation of such line of wire or other conductor, or of such pipe line or other contrivance, which may forthwith upon such conviction be destroyed or removed by direction of the Governor in Council.

9. The Governor in Council may make regulations not inconsistent with this Act for giving effect to the object and intention thereof, and by such regulations may impose fees to be paid thereunder by applicants for licenses or others.

(2) Such regulations shall be laid before Parliament within fifteen days after the making thereof, or, if Parliament is not then in session, within fifteen days after the opening of the next session thereof.

10. The Governor in Council may, by proclamation published in *The Canada Gazette*, impose export duties, not exceeding ten dollars per annum per horsepower, upon power exported from Canada, or not exceeding ten cents per thousand cubic feet on fluid exported from Canada, and such duties shall be chargeable accordingly after the publication of such proclamation.

(2) The Governor in Council may, by proclamation published in like manner, from time to time remove or re-impose such duties or vary the amount thereof.

(3) The Governor in Council may, by proclamation published in like manner, exempt from the payment of such duties such persons as comply with the direction of the Governor in Council with regard to the quantity of power or fluid to be supplied by such persons for distribution to customers for use in Canada.

PETROLEUM.

The Province of Ontario was responsible for the total production of oil in Canada during both 1907 and 1908. Active drilling explorations in search of oil were carried on in Alberta and British Columbia, but no production has yet been reported from these western Provinces.

In 1904, an Act was passed by the Dominion government, providing for the payment of a bounty of $1\frac{1}{2}$ cents per gallon on crude petroleum produced from wells in Canada. The payments are made on claims submitted by the producers of crude oil to the Minister of Trade and Commerce. These claims have to be substantiated as to quantity, by the certificate of the receiving stations, tanking companies, refineries or other purchasers, as well as by the supervising officers of the Department of Trade and Commerce. Moreover, declarations have to be made of the number and location of the wells from which the oil is derived; and all the books of the claimants are subject to examination at all times by the supervising officer of the department.

The bounty paid on the crude petroleum produced, gives, therefore, as accurate a basis as is available for a reliable statement of the annual production. In 1908 the total bounty paid was \$277,193, representing a quantity of 527,987 barrels, of 35 gallons each, of crude petroleum.

Table 1, following, gives the production of oil in Canada since 1901, in barrels of 35 gallons, together with the total value, and average price per barrel:—

PETROLEUM.—TABLE 1.
Annual Production of Crude Petroleum since 1901.

Year.	Barrels of 35 Gallons.	Value.	Average Price Per Barrel.
		\$	¢
1901	622,392	1,008,275	1 620
1902	530,624	951,190	1 792
1903	486,637	1,048,974	2 155
1904	503,474	935,895	1 858
1905	634,095	856,028	1 350
1906	569,753	761,760	1 337
1907	788,872	1,057,088	1 340
1908	527,987	747,102	1 415

The figures for the years 1905 to 1908 are deduced from the bounty paid by the federal government; whereas the production for the years 1901 to 1904 is based on direct returns received from the refineries, and the producers. Further details of these figures are given below in tabular form:—

Production of Crude Oil, 1901 to 1904, based on Direct Returns.

Crude Oil.	1901.	1902.	1903.	1904.
	Bls.	Bls.	Bls.	Bls.
Received at refineries	508,677	443,333	410,280	455,074
Direct sales for industrial purposes.	113,715	87,291	76,357	48,400
Total sales of crude oil	622,392	530,624	486,637	503,474
Total sales in gallons	21,783,720	18,571,840	17,032,295	17,621,590

Production of Petroleum estimated on the basis of the bounty of $1\frac{1}{2}$ cents per gallon, paid by the Dominion Government, 1905 to 1908.

Petroleum.	Bounty Paid.	Production of Crude Oil Represented.	
	\$	In Gals.	In Bls.
1905	332,900	22,193,336	634,095
1906	299,120	19,941,357	569,753
1907	414,158	27,610,526	788,872
1908	277,193	18,479,547	527,987

For the years previous to 1901, the production of crude oil was obtained from government inspection returns, by assuming a ratio of crude to refined. The statistics of production—on this basis—for the years 1881 to 1900, are given in Table 2:—

PETROLEUM.—TABLE 2.

Canadian Oils and Naphtha inspected, and corresponding quantities of Crude Oil.

Calendar Year.	Refined Oils Inspected.	Crude Equivalent Calculated.	Ratio of Crude to Refined.	Equivalent in Barrels of 35 Gallons.	Average Price Per Barrel of Crude.	Value of Crude Oil.
	Gals.	Gals.			\$ cts.	\$
1881.....	6,457,270	12,914,540	100:50	368,987	.....	.....
1882.....	6,135,782	13,635,071	100:45	389,573	.....	.....
1883.....	7,447,648	16,550,328	100:45	472,866	.....	.....
1884.....	7,993,995	19,984,987	100:40	571,000	.....	.....
1885.....	8,225,882	20,564,705	100:40	587,563	.....	.....
1886.....	7,768,006	20,442,121	100:38	584,061	0 90	525,655
1887.....	9,492,588	24,980,494	100:38	713,728	0 78	556,708
1888.....	9,246,176	24,332,042	100:38	695,203	1 02 $\frac{3}{4}$	713,695
1889.....	9,472,476	24,664,144	100:38	704,690	0 92 $\frac{3}{4}$	653,600
1890.....	10,174,894	26,776,037	100:38	795,030	1 18	902,734
1891.....	10,065,463	26,435,430	100:38	755,298	1 33 $\frac{3}{4}$	1,010,211
1892.....	10,370,707	27,291,334	100:38	779,753	1 26 $\frac{1}{2}$	984,438
1893.....	10,618,804	27,944,221	100:38	798,406	1 09 $\frac{1}{2}$	874,255
1894.....	11,027,082	29,018,637	100:38	829,104	1 00 $\frac{3}{4}$	835,322
1895.....	10,674,232	25,414,858	100:42	726,138	1 49 $\frac{3}{8}$	1,086,738
1896.....	10,634,284	25,438,771	100:42	726,822	1 59	1,155,647
1897.....	10,434,878	24,844,995	100:42	709,857	1 42 $\frac{1}{2}$	1,011,546
1898.....	11,148,343	26,543,685	100:42	758,391	1 40	1,061,747
1899.....	11,927,981	28,399,955	100:42	808,570	1 48 $\frac{3}{8}$	1,202,020
1900.....	13,428,422	24,867,449	100:54	710,498	1 62	1,151,007

By referring to Table 1, it will be noticed that the production for 1908 shows a considerable falling off, as compared with 1907. The decrease is 260,885 barrels, or 33·07 per cent in quantity; but, owing to the slightly increased prices which prevailed in 1908 for crude petroleum, the decrease in value is only \$309,986, or 29·32 per cent. This decrease is mainly due to the diminished production of the Merlin field in East Tilbury and Raleigh townships in Kent county.

The Imperial Oil Company have kindly given us their estimate of the production of the various Ontario oil fields during 1907 and 1908, and by comparing these figures, the source of the falling off will be apparent. The figures of production do not quite agree with those calculated on the basis of the bounty paid; but they are very interesting for the purpose of comparison:—

Production of Ontario Oil Fields, 1907 and 1908.

District.	1907.	1908.
	Bls.	Bls.
Dutton.....	14,698	12,268
Leamington (Staples, Comber, and Blytheswood).....	16,210	18,117
Bothwell.....	40,556	39,820
Richardson (Chatham).....	941	2,882
Thamesville.....	1,139	853
Moore township.....	32,720	25,667
Oilsprings.....	55,813	61,252
East Tilbury and Raleigh.....	344,358	170,589
Romney.....	49,783	11,165
Petrolia, (includes all districts not enumerated above).....	206,285	171,019
	762,503	513,632

Table 3 gives the value of the products manufactured during the respective years by the oil refineries of Canada. It is to be remembered, however, that the refineries use a considerable proportion of imported crude petroleum, which is probably equal in amount to the total production of Canadian crude oil; for in the fiscal year ending March 30, 1908, the imports of crude petroleum—as shown by the Customs' reports—amounted to nearly 25,000,000 gallons.

PETROLEUM.—TABLE 3.

Value of the Production of Canadian Oil Refineries.

Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$
1887.....	1,288,109	1893.....	1,825,265
1888.....	1,401,459	1899.....	1,490,870
1889.....	1,414,184	1900.....	1,620,705
1890.....	1,638,420	1901.....	1,251,373
1891.....	1,534,509	1902.....	1,222,641
1892.....	1,782,365	1903.....	1,302,104
1893.....	1,675,784	1904.....	975,840
1894.....	1,567,134	1905.....	(a) 1,815,525
1895.....	1,806,237	1906.....	(a) 2,120,343
1896.....	1,876,913	1907.....	(a) 2,245,980
1897.....	1,672,429	1908.....	(a) 1,995,982

(a) Derived from both Canadian and imported crude oils.

The following tables give the statistics of the oil industry of Canada: oil inspected, exported, imported, etc., both crude and manufactured.

PETROLEUM.—TABLE 4.

Total Amount of Oil Inspected, Canadian and Imported.

Fiscal Year.	Refined in Canada.	Imported.	Total.	Canadian.	Imported.
	Gals.	Gals.	Gals.	%	%
1881	6,406,783	476,784	6,883,567	93·1	6·9
1882	5,910,747	1,351,412	7,262,159	81·4	18·6
1883	6,970,550	1,190,828	8,161,378	85·4	14·6
1884	7,656,001	1,142,575	8,798,586	87·0	13·0
1885	7,661,617	1,278,115	8,939,732	85·7	14·3
1886	8,149,472	1,327,616	9,477,088	86·0	14·0
1887	8,243,962	1,665,604	9,909,566	83·2	16·8
1888	9,545,895	1,821,342	11,367,237	84·6	16·0
1889	9,462,834	1,767,812	11,230,646	84·3	15·7
1890	10,121,210	2,020,742	12,141,952	83·4	16·6
1891	10,270,107	2,022,002	12,292,109	83·6	16·4
1892	10,238,426	2,429,445	12,667,871	80·8	19·2
1893	10,683,806	2,641,690	13,325,496	80·2	19·8
1894	10,824,270	5,633,222	16,457,492	65·8	34·2
1895	10,936,992	5,650,994	16,587,986	65·9	34·1
1896	10,533,951	5,807,991	16,341,942	64·5	35·5
1897	10,506,526	6,248,743	16,755,269	62·7	37·3
1898	10,796,847	6,880,734	17,677,581	61·1	38·9
1899	11,005,804	7,232,348	18,238,152	60·3	39·7
1900	13,014,713	*8,216,207	21,230,920	61·3	38·7
1901	12,674,277	*9,232,165	21,907,142	57·9	42·1
1902	10,494,374	*10,916,396	21,411,270	49·0	51·0
1903	8,615,892	*14,479,176	23,095,068	37·3	62·7
1904	7,292,113	*17,369,930	24,662,043	29·6	70·4
1905	17,520,035	*10,284,053	27,804,088	63·0	37·0
1906	18,634,155	*9,255,200	27,889,355	66·8	33·2
1907 (9 months).....	15,365,933	*6,879,494	22,245,427	69·1	30·9
1908	22,887,026	*6,295,457	29,182,483	78·4	21·6

* Item (c) Table 6.

PETROLEUM.—TABLE 5.

Exports of Crude and Refined Petroleum, 1881-1908.

Calendar Year.	Crude Oil.		Refined Oil.		Total.	
	Gals.	Value.	Gals.	Value.	Gals.	Value.
		\$		\$		\$
1881.....					501	99
1882.....					1,119	286
1883.....					13,283	710
1884.....					1,098,090	30,168
1885.....					337,967	10,562
1886.....					241,716	9,855
1887.....					473,559	13,831
1888.....					196,602	74,542
1889.....					235,855	10,777
1890.....					420,492	18,154
1891.....	446,770	18,471	685	104	447,355	18,575
1892.....	310,387	12,945	1,146	100	311,533	13,045
1893.....	107,719	3,696	2,196	394	109,915	4,090
1894.....	53,985	2,773	5,297	513	59,282	3,286
1895.....	22,831	1,044	10,237	2,023	33,068	3,067
1896.....	601	101	7,489	999	8,090	1,100
1897.....			342	49	342	49
1898.....	96	4	12,735	3,001	12,831	3,005
1899.....			3,425	859	3,425	859
1900.....	40	2	8,559	394	8,559	2,396
1901.....	14,168	691	375	66	14,543	757
1902.....	400	40	626	146	1,026	186
1903.....	350	15	1,013	190	1,363	205
1904.....	4,207	213	2,126	470	6,333	683
1905.....	35	2	7,228	2,078	7,263	2,080
1906.....	900	141	8,938	1,401	9,838	1,542
1907.....	1,125	102	3,132	575	4,257	677
1908.....			296	71	296	71

By glancing over Table 6, it will be perceived that a large quantity of crude oil is imported into Canada. The greater part of this goes to the refineries. In 1908, this importation of crude oil amounted to 24,866,963 gallons; representing 710,485 barrels, of 35 gallons each; which is a considerable increase over 1907, when it was 13,252,963 gallons, or 378,656 barrels.

PETROLEUM.—TABLE 6.

Imports of Petroleum and Products thereof, during the Fiscal Years
1907 and 1908.

Products.	1907 (9 mos. ending March.)		1908 (12 mos. ending March.)	
	Gals.	Value.	Gals.	Value.
		\$		\$
(a) Petroleum crude, fuel and gas oils (8233 specific gravity).....	13,252,968	469,730	24,866,963	889,080
(b) Crude petroleum, gas oils (other than benzine and gasoline).....	10,146	1,214	52,605	5,900
(c) Coal and kerosene, distilled, purified or refined, and petroleum, N.E.S.....	6,879,494	578,329	6,295,457	503,829
(d) Illuminating oils composed wholly or in part of the products of petroleum, coal, shale or lignite costing more than 30 cents per gallon.....	4,654	971	2,232	1,035
(e) Lubricating oils composed wholly or in part of petroleum, costing less than 25 cents per gallon.....	1,902,702	248,200	3,262,846	411,172
(f) Products of petroleum.....	1,595,897	181,817	1,834,615	195,003
Total.....	23,645,361	1,480,261	36,314,718	2,006,019

(a) Free. (b) Duty 1½c. per gal. (c), (e), and (f) Duty 2½c. per gal. (d) 20 per cent.

PETROLEUM.—TABLE 7.

Imports of Petroleum and Products thereof, years 1880-1908.

Fiscal Year. *	Gals.	Value.	Fiscal Year.	Gals.	Value.
		\$			\$
1880.....	687,641	131,359	1895.....	7,577,674	525,372
1881.....	1,437,475	262,168	1896.....	8,005,891	735,913
1882.....	3,007,702	393,031	1897.....	8,415,302	697,169
1883.....	3,086,316	358,546	1898.....	9,074,311	724,519
1884.....	3,160,282	380,082	1899.....	10,394,208	763,303
1885.....	3,767,441	415,195	1900.....	9,633,647	864,833
1886.....	3,819,146	421,833	1901.....	11,082,822	982,640
1887.....	4,290,003	467,003	1902.....	13,220,005	1,107,207
1888.....	4,523,056	498,025	1903.....	18,799,312	1,643,371
1889.....	4,650,274	484,462	1904.....	24,521,115	2,152,623
1890.....	5,075,650	515,852	1905.....	35,296,352	2,151,514
1891.....	5,071,386	498,330	1906.....	32,624,410	1,908,177
1892.....	5,649,145	475,732	1907 (9 months).....	23,645,861	1,480,261
1893.....	6,002,141	446,389	1908.....	36,314,718	2,006,019
1894.....	6,597,108	439,988			

PETROLEUM.—TABLE 8.

Imports of Crude and Manufactured Oils, other than Illuminating, 1881-1908.

Fiscal Year.	Gals.	Fiscal Year.	Gals.
1881..	960,691	1895.....	1,106,993
1882.....	1,656,290	1896.....	1,079,965
1883.....	1,895,188	1897.....	802,236
1884.....	2,017,707	1898.....	1,047,026
1885.....	2,489,326	1899.....	1,017,278
1886.....	2,491,530	1900.....	1,406,700
1887.....	2,624,399	1901.....	1,838,966
1888.....	2,701,714	1902.....	2,296,353
1889.....	2,882,462	1903.....	4,316,010
1890.....	3,054,908	1904.....	7,141,109
1891.....	3,049,384	1905.....	25,002,047
1892.....	3,047,199	1906.....	23,365,674
1893.....	1,481,749	1907 (9 months).....	16,761,713
1894.....	1,860,829	1908.....	30,017,029

* The figures for the years from 1881 to 1894, inclusive, represent the total imports of petroleum and products, less the quantity of imported illuminating oils, inspected by the Inland Revenue Department. For 1895 and subsequent years, the table is composed of items (a), (b), (c), and (f) of Table 6.

PETROLEUM.—TABLE 9.

Imports of Paraffin Wax, 1883-1908.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1883.....	43,716	5,166	1896.....	150,287	10,042
1884.....	39,010	6,079	1897.....	138,703	7,945
1885.....	59,967	8,123	1898.....	103,570	5,987
1886.....	62,035	7,953	1899.....	92,242	4,025
1887.....	61,132	6,796	1900.....	47,400	3,529
1888.....	53,862	4,930	1901.....	118,848	9,639
1889.....	63,229	5,256	1902.....	225,885	12,750
1890.....	239,229	15,844	1903.....	592,642	28,674
1891.....	753,854	50,275	1904.....	418,967	18,440
1892.....	733,873	48,776	1905.....	81,992	7,795
1893.....	452,916	38,935	1906.....	112,612	9,721
1894.....	208,099	15,704	1907 (9 months).....	55,021	5,922
1895.....	163,817	11,579	1908.....	62,308	8,041

PETROLEUM.—TABLE 10.

Imports of Paraffin Wax Candles, 1880-1908.

Fiscal Year	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	10,445	2,269	1895.....	19,448	2,541
1881.....	7,494	1,683	1896.....	25,787	4,072
1882.....	5,818	1,423	1897.....	25,114	2,929
1883.....	7,149	1,734	1898.....	60,802	4,427
1884.....	8,755	2,229	1899.....	62,331	5,856
1885.....	9,247	2,449	1900.....	27,663	3,671
1886.....	12,242	2,587	1901.....	44,562	3,588
1887.....	21,364	3,611	1902.....	51,120	5,752
1888.....	22,054	2,829	1903.....	83,377	9,025
1889.....	8,038	1,337	1904.....	83,471	9,078
1890.....	7,233	1,186	1905.....	137,353	15,293
1891.....	10,593	2,116	1906.....	148,808	15,804
1892.....	9,259	1,952	1907 (9 months).....	38,900	5,088
1893.....	8,351	1,735	1908.....	156,934	20,035
1894.....	10,818	1,685			

A reference to Tables 1 and 2 will show that, the production of crude oil in 1907 was the highest since 1899. This is accounted for by the active development of the Merlin or East Tilbury field, which although discovered in December, 1905, was at its best in 1907. During that year it was responsible for nearly 43 per cent of the total production of oil in Ontario. In 1908, this field did not produce as much as during the previous year, and is responsible for the greater part of the decrease in the total production.

OIL-SHALES IN NEW BRUNSWICK AND NOVA SCOTIA.

The oil-shale deposits of New Brunswick, which cover large areas in Kings, Albert, and Westmorland counties, have been known for a long period. As early as 1862, some steps were taken towards their exploitation as a source of mineral oil. This enterprise, however, was soon abandoned after the discovery of the Pennsylvania and other oil fields.

In 1908, the Albertite, Oilite, and Cannel Coal Co., Ltd., of New York—represented in New Brunswick by Mr. Matthew Lodge, of Moncton—took up again very actively the question of distillation of oil from these Albert shales, and 45 tons of the oil-shales—which occur at Baltimore in Albert county—were sent to Glasgow, Scotland, for the purpose of making a commercial test in the works of the Pumpherston Oil Company. Dr. R. W. Ells, on the recommendation of Dr. Eugene Haanel, Director of Mines, was commissioned to go to Scotland for the purpose of witnessing and reporting on these experiments. The preliminary report on these tests was published in the report of the Mines Branch, Department of Mines, for 1908. The results were very satisfactory, as the average yield per ton of shale was 40.09 gallons of crude oil, and 76.94 pounds of sulphate of ammonia. This compares very favourably with the shales which are worked so extensively in Scotland, the yield of which rarely exceeds 25 to 30 gallons of crude oil.

Should the New Brunswick enterprise become a commercial success there is little doubt that it will stimulate the exploitation of other oil-shale deposits which exist in places in Nova Scotia, notably at Stellarton in Pictou county. The Stellarton deposits were also worked to some extent in the early sixties.

The Mines Branch of the Department of Mines has installed a distillation furnace and apparatus in its chemical laboratory, for the purpose of testing oil-shales, determining their yield of crude oil, sulphate of ammonia, etc. It may be mentioned that the oil-shale industry is successfully carried on not only in Scotland, but in France and New South Wales. The outlook for the establishment of an oil-shale industry in Canada is very promising.

PHOSPHATE.

The greater part of the production of phosphate in Canada results from the exploitation of mica deposits, in which apatite occurs as an associated mineral, and is saved as a by-product.

This phosphate rock, or apatite, is used mainly for the manufacture of fertilizers and also for the production of phosphorus, this substance being manufactured by the Electric Reduction Company of Buckingham, Province of Quebec.

The Canadian phosphate industry during the last fifteen years has been very intermittent and spasmodic, as is shown by the irregularity of the annual production, which varies between the wide limits of 600 and 3,000 tons. Previous to 1892 this industry was very flourishing, but the discovery of immense deposits in the United States, which could be cheaply mined, caused it practically to collapse. In 1907, our returns show that a quantity of 824 tons of phosphate rock found its way to the market, representing a value of \$6,018. The figures for 1908 show a considerable increase, having been 1,596 tons valued at \$14,794.

The statistics of the phosphate industry are given in the following tables :—

PHOSPHATE.—TABLE 1.

Annual Production.

Calendar Year.	Tons.	Average Value per ton.	Value.	Calendar Year.	Tons.	Average Value per ton.	Value.
		\$ cts.	\$			\$ cts.	\$
1886	20,495	14 85	304,338	1898	733	5 00	3,665
1887	23,690	13 50	319,815	1899	3,000	6 00	18,000
1888	22,485	10 77	242,285	1900	1,415	5 02	7,105
1889	30,988	10 21	316,662	1901	1,033	6 07	6,280
1890	31,753	11 37	361,045	1902	856	5 79	4,953
1891	23,588	10 24	241,603	1903	1,329	6 18	8,214
1892	11,932	13 20	157,424	1904	817	5 62	4,590
1893	8,198	8 65	70,942	1905	1,300	6 48	8,425
1894	6,861	6 00	41,166	1906	850	7 50	6,375
1895	1,822	5 25	9,565	1907	824	7 30	6,018
1896	570	6 00	3,420	1908	1,596	9 26	14,794
1897	908	4 39	3,984				

PHOSPHATE.—TABLE 2.

Exports.

Calendar Year.	Ontario.		Quebec.		Totals.	
	Tons.	*Value.	Tons.	*Value.	Tons.	*Value.
		\$		\$		\$
1878.....	824	12,278	9,919	195,831	10,743	208,109
1879.....	1,842	20,565	6,604	101,470	8,446	122,035
1880.....	1,387	14,422	11,673	175,664	13,060	190,086
1881.....	2,471	36,117	9,497	182,339	11,968	218,456
1882.....	568	6,338	16,585	302,019	17,153	308,357
1883.....	50	500	19,666	427,168	19,716	427,668
1884.....	763	8,890	20,946	415,350	21,709	424,240
1885.....	434	5,962	28,535	490,331	28,969	496,293
1886.....	644	5,816	19,796	337,191	20,460	343,007
1887.....	705	8,277	22,447	424,940	23,152	433,217
1888.....	2,643	30,247	16,133	268,362	18,776	298,609
1889.....	3,547	38,833	26,440	355,935	29,987	394,768
1890.....	1,866	21,329	26,591	478,040	28,457	499,369
1891.....	1,551	16,646	15,720	368,015	17,271	384,661
1892.....	1,501	12,544	9,981	141,221	11,482	153,765
1893.....	1,990	11,550	5,748	56,402	7,738	67,952
1894.....	1,980	10,560	3,470	29,610	5,450	40,170
1895.....			250	2,500	250	2,500
1896.....	1	5	299	2,990	300	2,995
1897.....	70	450	165	400	235	850
1898.....	21	240	702	8,000	723	8,240
1899.....	215	1,850	93	1,725	308	3,575
1900.....					Nil	Nil
1901.....					6	120
1902.....					70	1,880
1903.....					1	20
1904.....					191	5,348
1905.....					40	1,253
1906.....						
1907.....						
1908.....					1	30

* These values do not compare with those in Table 1; the spot value is adopted for the production, while the exports are valued upon quite a different basis.

During the decade of 1880 to 1890 the phosphate industry was very prosperous in Canada, when the apatite deposits of the region of the Ottawa River basin, in western Quebec and eastern Ontario, were actively worked. The product of those phosphate mines was exported to both the United States and Europe. However, the discovery of the Florida and Tennessee deposits, which can be worked on a large scale and cheaply by steam shovels, and later on the discovery of the Algerian deposits, were the cause of the almost complete abandonment of the phosphate industry in Canada, where the mineral occurs as scattered deposits of apatite, which are rather expensive to work.

These apatite deposits, from which large supplies of phosphate could be obtained, constitute a reserve which represents valuable assets to the country, and should conditions warrant it a great number of mines and deposits could be started on short notice. That such a time is perhaps not far remote may be inferred by the reports drawn up by the committee on the conservation of natural

resources, appointed by the United States Government. In an interesting paper by F. B. Van Horn,¹ it is pointed out that, as growing crops deplete the soil of its phosphoric acid, if no steps are taken to return this substance, the soil must eventually become non-producing. He estimates that, on the basis of an increase of production at the rate of the past twenty years, the present visible available supply of phosphate rock in the United States will be exhausted in twenty-five years.

Dr. Van Hise² remarks that of the three plant foods required for the fertility of the soil, viz., nitrogen, potassium, and phosphorus, this last element is the most difficult to replace and to supply, and that the phosphate deposits constitute the most important source of this element.

After going into figures showing the loss of phosphoric acid from the soil, he remarks: "To make good the phosphorus lost to the soil in the United States by reckless disregard of the future, would require the present output of our mines for more than a century, even if at once it were possible to prevent further depletion of the soil, and no more of our phosphate rock were required to neutralize current waste."

Realizing the importance of conserving the phosphate resources, "on December 8th, 1908, the phosphate lands of the west (of the United States) were formally withdrawn from private entry, thus retaining these deposits of fundamental importance to the future of the nation as its property."³

¹The Phosphate Deposits of the United States, F. B. Van Horn, Conservation of Mineral Resources. United States Geological Survey, 1909.

²The Conservation of the Soil. By C. R. Van Hise, May, 1909. American Academy of Political and Social Science.

³ Ibid.

PYRITES.

In the last few years, the production of pyrites has shown a steady increase, and in 1908 the figures represent the highest tonnage recorded since 1893. In 1907 the production was 46,243 tons valued at \$212,491, and in 1908 it reached 47,336 tons valued at \$224,824. This production is derived from deposits in the Provinces of Quebec and Ontario, and it is used for the manufacture of sulphuric acid, partly in Canada and partly in the United States.

The following tables give the statistics of the Canadian production of pyrites since 1886, the imports of brimstone and crude sulphur, and the exports of pyrites.

PYRITES.—TABLE 1.
Annual Production.

Calendar Year.	Tons, 2,000 lbs.	Value.	Calendar Year.	Tons, 2,000 lbs.	Value.
		\$			\$
1886.....	42,906	193,077	1898.....	32,218	128,872
1887.....	38,043	171,194	1899.....	27,687	110,748
1888.....	63,479	285,656	1900.....	40,031	155,164
1889.....	72,225	307,292	1901.....	35,261	130,544
1890.....	49,227	123,067	1902.....	35,616	138,939
1891.....	67,731	203,193	1903.....	33,982	127,713
1892.....	59,770	179,310	1904.....	37,180	134,033
1893.....	58,542	175,626	1905.....	33,339	125,486
1894.....	40,527	121,581	1906.....	42,743	169,990
1895.....	34,198	102,594	1907.....	46,243	212,491
1896.....	33,715	101,155	1908.....	47,336	224,824
1897.....	38,910	116,730			

PYRITES.—TABLE 2.
Imports :—Brimstone and Crude Sulphur.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	1,775,489	27,401	1895.....	4,900,225	56,965
1881.....	2,118,720	33,956	1896.....	6,934,190	63,973
1882.....	2,375,821	40,329	1897.....	8,672,751	87,719
1883.....	2,336,085	36,737	1898.....	38,026,798	373,786
1884.....	2,195,735	37,463	1899.....	24,517,026	265,799
1885.....	2,248,986	35,043	1900.....	21,128,656	215,433
1886.....	2,922,043	43,651	1901.....	23,856,651	270,608
1887.....	3,103,644	38,750	1902.....	24,640,735	325,307
1888.....	2,048,812	25,318	1903.....	24,412,737	259,123
1889.....	2,427,510	34,006	1904.....	19,364,730	204,663
1890.....	4,440,799	44,276	1905.....	23,435,140	242,261
1891.....	3,601,748	46,351	1906.....	43,047,672	436,156
1892.....	4,769,759	67,095	1907 (9 months).....	25,854,615	277,439
1893.....	6,381,203	77,216	1908*.....	51,806,739	517,249
1894.....	5,845,463	61,558			

* Brimstone, crude or in roll or flour, or sulphur in roll or flour.

PYRITES.—TABLE 3.

Exports of Pyrites.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1894.....	8,532	33,205	1902.....	18,584	50,178
1895.....	7,705	38,298	1903.....	21,067	59,604
1896.....	15,002	33,837	1904.....	18,279	49,911
1897.....	15,096	30,812	1905.....	19,755	55,767
1898.....	9,804	26,387	1906.....	26,050	65,349
1899.....	15,599	34,084	1907.....	25,056	80,139
1900.....	17,620	41,182	1908.....	17,283	96,600
1901.....	24,971	57,263			

Quebec.

In 1907 two mines of pyrites in the Province of Quebec made returns of production. These were: the Nichols Chemical Company, working the Albert mines at Capelton; and the Eustis Mining Company, operating the Eustis mine at Eustis. In 1908 the former Company had closed the Albert mines, which were not worked during that year, and only the Eustis Mining Company recorded a production. However, prospecting and development work has been going on during the last two years at various points in the Eastern townships of the Province of Quebec on pyrite deposits, which also usually contain a certain proportion of copper pyrites. Among these properties in course of development may be mentioned the Suffield mine, in Ascot township, which, according to the report of the Superintendent of Mines of the Province of Quebec, has now several thousand tons of ore in heaps in the mine yard.

Ontario.

In Ontario the mining of pyrites as an ore of sulphur for the manufacture of sulphuric acid is developing steadily. In 1908 the following companies worked deposits of pyrites, but all did not ship, as several confined themselves to development work:—

Nichols Chemical Company, Sulphide, Ont.

Northern Pyrites Company, Dinorwic, Ont.

Northland Mining Company, London, Ont.

The pyrite deposits of Ontario have been made the subject of a report by Mr. E. L. Fraleck, published in the Sixteenth Ontario Bureau of Mines Report, for 1907.

The principal centre of the iron pyrites industry in Ontario is in Madoc township, where the Nichols Chemical Company, in 1907, erected, at Sulphide, a sulphuric acid plant which is in successful operation. The main supply of ore used in these works is derived from the Company's own mine, but they also buy ore from other workings opened in the vicinity. Deposits of pyrites also occur in the region, traversed by the Timiskaming and Northern Ontario railway, and one of these

situated near Rib lake, is being actively worked by the Northland Mining Company. The product from this mine is exported to the United States.

At the Helen iron mine in the Michipicoten district a large body of sulphur ore has been struck in the underground workings, and the Lake Superior Corporation, Sault Ste. Marie, who are working the iron mine, have made shipments of sulphur ore.

The Northern Pyrites Company are developing a very promising deposit on Big Vermillion lake, north of Minnitaki. This deposit is situated on the Lake Superior branch of the Grand Trunk Pacific, and the Company will begin shipping as soon as the railway is ready to receive freight.

According to the quotations of the Engineering and Mining Journal, in 1908, the price of pyrite f. o. b. at the mine or at Atlantic coast ports, varied between 9 cents and 13 cents per unit of sulphur contained, according to size of ore and the presence of deleterious elements. The availability of any pyrite deposit would, therefore, depend to a great extent on transportation facilities and on its distance from sulphuric acid works.

The following remarks taken from Mr. Fraleek's report mentioned above, on the requirements of pyrite deposits, are interesting :—

"(1) The deposit must be of sufficient size to warrant the cost of development necessary to maintain a constant supply ;

(2) It must be favourably situated for transportation facilities ;

(3) It must be free from any volatile impurities, such as lead, zinc, arsenic, etc. Through the development of the contact process, which necessitates washing of the gases, it is possible to utilize certain ores that formerly could only be employed for special purposes. Impure ores, however, notwithstanding high sulphur content, are heavily penalized.

(4) The ore must contain approximately at least 40 per cent of sulphur content. The scarcity of pyrite just at the present time, however, is such that an ore grading between 35 and 40 per cent would be saleable, especially if of good roasting quality, but at a somewhat diminished price on account of the extra material requiring to be handled.

(5) The ore must be of good roasting quality. A good burning pyrite ore will roast down to one-half per cent of sulphur in the cinder. If the gangue consists of easily fusible silicates this percentage will be correspondingly increased. With the improvements in roasting furnaces, however, in recent years, and more care and skill being exercised in the handling of the mechanical adjustments, better results are constantly being achieved, and probably as much depends upon skilful roasting as upon the character of the ore."

SALT.

The salt fields of southwestern Ontario are responsible for the whole Canadian production of salt in both 1907 and 1908. No returns of production were received from New Brunswick, or from Manitoba, where in years past a small local salt industry had developed, using as raw material the brine from some salt springs.

In 1907 the total sales of Canadian salt were 72,697 tons, valued at \$342,315. This was a decrease of 4,023 tons, or 5.2 per cent as compared with 1906; but as a much greater proportion of fine table and dairy salt was made, the total value in 1907 was \$13,185, or 4 per cent higher than in the previous year. In 1908 the sales were 79,975 tons valued at \$378,798, an increase of 7,278 tons or 9.1 per cent in quantity, and \$36,483, or 9.6 per cent in value, as compared with 1907.

The above values represent the value of the salt, exclusive of the packages. The value of the packages (barrels, bags, etc.,) used in 1908 was \$168,019, and in 1907 the value was \$149,823.

Detailed statistics of the production during the past five years, showing the total sales of salt, the value of the sales, (exclusive of packages), the values of the packages used, stock in manufacturers' hands at the end of each year, number of men employed and wages paid, are given in Table 1, while the total annual production since 1886 is given in Table 2.

SALT.—TABLE 1.
Detailed Statistics of Production, 1904-1908.

		1904.	1905.	1906.	1907.	1908.
Sales of salt.....	Tons	69,477	67,340	76,762	72,697	79,975
Value of salt, (exclusive of packages)...	\$	321,778	320,858	329,130	342,315	378,798
Value of packages.....	\$	140,216	113,004	147,705	149,823	168,019
Stock in manufacturer's hands at end of year.....	Tons	8,497	5,206	6,365	3,923	5,631
Men employed.....	No.	.....	191	210	215	207
Wages paid.....	\$	.....	83,391	92,000	95,667	95,575

SALT.—TABLE 2.
Annual Production, 1886–1908.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	62,359	227,195	1898.....	57,142	248,639
1887.....	60,173	166,394	1899.....	59,339	254,390
1888.....	59,070	185,460	1900.....	62,055	279,458
1889.....	32,832	129,547	1901.....	59,428	262,328
1890.....	43,754	198,857	1902.....	64,456	292,581
1891.....	45,021	161,179	1903.....	62,452	297,517
1892.....	45,486	162,041	1904.....	69,477	321,778
1893.....	62,324	195,926	1905.....	67,840	320,858
1894.....	57,199	170,687	1906.....	76,720	329,130
1895.....	52,376	160,455	1907.....	72,697	342,315
1896.....	43,960	169,693	1908.....	79,975	378,798
1897.....	51,348	225,730			

As will be seen by the above table, the salt industry is slowly but steadily developing; the figures of production for 1908 being the highest yet recorded.

The salt fields of western Ontario are very extensive. The salt beds form part of the Onondaga formation of Silurian age, and the saliferous horizons underlie a territory extending from Kincardine to Lake Erie, bordering Lake Huron and the Detroit river. This basin measures an extreme length of 150 miles, with a maximum width of 40 miles at the centre and tapering towards the end. This would cover an area of over 2,500 square miles. An idea of the immense deposits of salt contained in this area may be gathered from the fact that a bore-hole sunk at Goderich, in Huron county, to a depth of 1,517 feet, went through six beds of salt, ranging in thickness from 6 feet to 35 feet; whereas at Windsor, in a well 1,672 feet deep, four beds were traversed, one of which is said to measure 250 feet in thickness.

So far, the salt industry of western Ontario is confined to the production of salt for the trade, but with such deposits, which are practically inexhaustible, there is a wide field for the establishment of a soda industry. The imports into Canada of the products of the soda industry reach a very high figure, as may be gathered from the following items of importation during the fiscal year ending in March, 1908.

	Lbs. imported.	Value.
		\$
Soda, ash or borilla.....	23,330,041	184,340
Soda bichromate.....	284,960	17,089
Caustic soda, in packages of 25 lbs. or more.....	10,067,829	189,976
Sal soda.....	11,449,841	107,054
Sulphate of soda.....	1,482,813	7,813

As at present carried on in western Ontario, the salt industry consists essentially in the production of table, dairy, and coarse salt, and a small quantity of land salt. These are manufactured by forcing water down bore-holes sunk to the rock salt bed, through a casing, inside of which is a pipe of smaller diameter. A powerful pump forces water down the outer tube; this dissolves the salt, eventually forming large cavities at the bottom of the well, which offer a great surface of salt to the action of the water. The water forced downwards is charged to saturation in the salt cavity, and as the rock is not fissured or porous, this brine is forced upwards through the inner tube. After a process of purification and settling, this brine is evaporated either in vacuum pans or in large open air vats, and after passing through mechanical dryers or over drying floors, the salt is ready for the market.

The following are analyses of brines obtained from wells in these salt fields. The figures are per 1,000 parts in weight.

Analyses of Brines.*

—	Sodium chloride.	Calcium chloride.	Magnesium chloride.	Sulphate of lime.	Specific gravity.	Degrees of salometer.
Goderich, sample taken August 19, 1866.....	259·000	0·432	0·254	1·882	1·205	100
Goderich, same well as above, November 5, 1868.....	236·410	0·190	0·410	4·858	1·187	92
Clinton well.....	204·070	0·470	0·184	5·583	1·157	80
Kincardine.....	241·350	0·840	0·230	3·264	1·191	94

* Analyses by Dr. T. Sterry Hunt, laboratory, Geological Survey of Canada. Figures are per 1,000 parts by weight.

The following tables give the statistics of the exports and imports of salt since 1880:—

SALT.—TABLE 2.

Exports.

Calendar Year.	Bus.	Value.	Calendar Year.	Bus.	Value.
		\$			\$
1880.....	467,641	46,211	1896.....	3,842	899
1881.....	343,208	44,627	1897.....	5,383	1,193
1882.....	181,758	18,350	1898.....	5,202	1,252
1883.....	199,733	19,492	1899.....	11,205	2,773
1884.....	167,029	15,291	1900.....	37,653	8,997
1885.....	246,794	18,756	1901.....	39,224	6,510
1886.....	224,943	16,886	1902.....	9,331	3,798
1887.....	154,045	11,526			
1888.....	15,251	3,987		Lbs.	
1889.....	8,557	2,390			
1890.....	6,605	1,667	1903.....	1,915,648	5,927
1891.....	5,290	1,277	1904.....	1,006,036	4,186
1892.....	2,000	504	1905.....	1,447,728	6,112
1893.....	4,940	1,267	1906.....	618,707	3,437
1894.....	4,639	1,120	1907.....	2,222,542	7,709
1895.....	4,865	959	1908.....	529,229	3,840

SALT.—TABLE 3.
Imports :—Salt Paying Duty.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	726,640	3,916	1895.....	8,498,404	29,881
1881.....	2,588,465	6,355	1896.....	7,665,257	24,550
1882.....	3,679,415	12,318	1897.....	11,911,766	33,470
1883.....	12,136,968	36,223	1898.....	11,068,785	32,792
1884.....	12,770,950	38,949	1899.....	11,781,453	32,839
1885.....	10,397,761	31,726	1900.....	11,028,337	30,180
1886.....	12,266,021	39,181	1901.....	11,625,688	34,087
1887.....	10,413,258	35,670	1902.....	13,892,849	39,605
1888.....	10,509,799	32,136	1903.....	14,554,693	41,785
1889.....	11,190,088	38,968	1904.....	29,779,183	73,826
1890.....	15,135,109	57,549	1905.....	18,473,868	58,056
1891.....	15,140,827	59,311	1906.....	21,366,064	59,805
1892.....	18,643,191	65,963	1907..... (9 mos.)	21,834,435	58,553
1893.....	21,377,339	79,838	1908.....	31,019,400	79,341
1894.....	15,867,825	53,336			

	Duty.	1907.*		1908.	
		Lbs.	Value.	Lbs.	Value.
			\$		\$
Salt, coarse, N.E.S.....	5c. per 100 lbs.	12,231,955	25,309	{ 17,340,300	27,264
Salt, fine, in bulk.....	5c. "	3,340,990	7,732		
Salt, N.E.S., in bags, barrels or other packages.....	7½c. "	6,261,490	25,512	13,679,100	52,077
Total.....		21,834,435	58,553	31,019,400	79,341

*Nine months.

SALT.—TABLE 4.
Imports :—Salt not Paying Duty.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$
1880.....	212,714,747	400,167	1895.....	201,691,248	332,711
1881.....	231,640,610	488,278	1896.....	205,005,100	338,888
1882.....	166,183,962	311,489	1897.....	215,844,484	312,117
1883.....	246,747,113	386,144	1898.....	202,634,927	293,410
1884.....	225,390,121	321,243	1899.....	183,046,365	267,520
1885.....	171,571,209	255,719	1900.....	193,554,550	295,253
1886.....	180,205,949	255,359	1901.....	216,271,603	339,887
1887.....	203,042,332	285,455	1902.....	238,648,737	385,629
1888.....	184,166,986	220,975	1903.....	232,708,675	361,185
1889.....	180,847,800	253,009	1904*.....	198,634,047	338,082
1890.....	158,490,075	252,291	1905*.....	196,907,500	340,954
1891.....	195,491,410	321,239	1906*.....	203,080,000	352,214
1892.....	201,831,217	314,995	1907†.....	139,459,900	240,841
1893.....	191,595,530	281,462	1908.....	200,944,800	350,878
1894.....	196,668,730	328,300			

* Salt imported from the United Kingdom, or any British possession, or imported for the use of the sea or gulf fisheries.

† Nine months only.

It is seen that the exports of salt are insignificant, but the imports are considerable; in fact, in value they amount to slightly more than the salt production of Canada. The following table has been inserted to give an approximate idea of the consumption of salt in Canada. The figures of production are for the calendar year, and those of imports for the fiscal year, and for that reason the table is not accurate, but is sufficiently so to serve the purpose.

Consumption of Salt in Canada in 1908.

	Lbs.	Value.
		\$
Canadian salt, production in 1908.....	159,950,000	378,798
Less exports.....	529,229	3,840
	159,420,771	374,958
Imports of salt paying duty.....	31,019,400	79,341
" free of duty.....	200,944,800	350,878
	391,384,971	805,177

All the salt imported from Great Britain enters Canada free of duty. From other countries only salt imported for the express use of sea or gulf fisheries enters free of duty.

MISCELLANEOUS NON-METALLIC.

ARSENIC.

Up to 1903 the main source of the production of arsenic in Canada was the Deloro mine in Hastings county, Ontario. The arsenic was recovered at Deloro in the process of treating the auriferous mispickel ores found in the district. In 1902, however, the mine was closed, though the mill continued to work on tailings and ore from the dump until 1903, when operations ceased altogether. This property has recently been taken over by the Deloro Mining and Reduction Company, and the plant entirely rebuilt, with the object of treating ores from Cobalt district as well as the local mispickel ores. There was no production of white arsenic at the plant, however, during 1906.

The ore shipped from the Cobalt district contains important quantities of arsenic, though practically nothing is now paid to the mine owners for this mineral by the purchasing companies. Considerable quantities of these ores are, however, now being treated in Canada in metallurgical works, in which white arsenic is being recovered in addition to silver. There are three of these plants, one at Copper Cliff operated by the Canadian Copper Co., a second at Thorold operated by the Coniagas Reduction Co., and the third at Deloro, already mentioned.

The quantity of these ores thus treated in Canada in 1906 was 998 tons, from which there was recovered 201 tons of white arsenic valued at \$14,058. In 1907 there were 2,266 tons treated, with a recovery of 330 tons of arsenic valued at \$36,209, and in 1908 the ore treated was 7,182 tons, and the white arsenic recovered 715½ tons valued at \$41,060.

No doubt a very large proportion of the arsenic contained in the ores exported is recovered in their treatment abroad.

The Ontario Bureau of Mines has estimated the total arsenical content of the Cobalt District ores shipped since 1904 as follows:—

Arsenical Content of Cobalt District Ores Shipped.

	Ore Shipped.	Total Arsenic contained.	Per cent in ore.
	Tons.	Tons.	
1904.....	158	72	45·6
1905.....	2,144	549	25·6
1906.....	5,335	1,440	27·0
1907.....	14,788	2,958	20·0
1908.....	25,624	3,672	14·3

In addition to the Cobalt District ores, small quantities of arsenical ore have been shipped during the past two years by the Timagami Mining and Milling Co., Ltd., from their mine at Greys Siding on the Timiskaming and Northern Ontario railway, and also some arsenical concentrates by the Boston Richardson Mining Co. of Goldboro, Nova Scotia. According to information kindly furnished by H. S. Badger, the superintendent of the latter Company, the arsenical concentrate is the residue of the mill concentrates after the gold concentrates have been extracted by bromo-cyanide. The tailings as discharged from the cyanide vats carry about 40 per cent silica. These are re-concentrated to eliminate the silica, and brought down to a clean mispickel concentrate carrying from 38 per cent to 41 per cent metallic arsenic. It is dried, and shipped in sacks, most of it going to Swansea, and some to Belgium.

In the following tables the production of arsenical ore, and white arsenic, and the imports and exports of arsenic are shown :—

Annual Production of Arsenic.

Calendar Year.	Arsenic in Ore.		White Arsenic.	
	Tons.	Value.	Tons.	Value.
1885.....			440	\$ 17,600
1886.....			120	5,460
1887.....			30	1,200
1888.....			30	1,200
1889.....			Nil.	Nil.
1890.....			25	1,500
1891.....			20	1,000
1892-3.....			Nil.	Nil.
1894.....			7	420
1895-8.....			Nil.	Nil.
1899.....			57	4,872
1900.....			303	22,725
1901.....			695	41,676
1902.....			800	48,000
1903.....			257	15,420
1904-5.....				
1906.....			201	14,058
1907.....	656	\$11,094	330	36,209
1908.....	986	17,506	715½	41,060

Exports of White Arsenic.

Calendar Year.	Lbs.	Value.	Calendar Year.	Lbs.	Value
		\$			\$
1902.....	547,698	16,192	1906.....	271,063	5,981
1903.....	395,573	10,583	1907.....	613,504	10,850
1904.....	146,000	6,900	1908.....	1,913,732	43,493
1905.....	108,000	5,400			

Annual Imports of Arsenic, 1880-1906.

Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.	Fiscal Year.	Lbs.	Value.
		\$			\$			\$
1880.. . . .	18,197	576	1889. . . .	60,269	2,434	1898.	291,967	14,270
1881.	31,417	1,070	1890. . . .	138,509	4,474	1899.	582,383	24,203
1882.	138,920	3,962	1891. . . .	115,248	4,027	1900.	230,730	11,035
1883.	51,953	1,812	1892. . . .	302,958	9,365	1901.	159,263	8,361
1884.	19,337	773	1893. . . .	447,079	12,907	1902.	106,857	6,004
1885.	49,080	1,566	1894. . . .	292,505	10,018	1903.	298,375	11,824
1886.	30,181	961	1895. . . .	1,115,697	31,932	1904.	414,065	12,421
1887.	32,436	1,116	1896. . . .	664,854	27,523	1905.	268,274	7,661
1888.	27,510	1,016	1897. . . .	152,275	8,378	1906 Duty free	446,975	19,169

Imports of Arsenious Oxide and Sulphide of Arsenic.

Fiscal Year.		Lbs.	Value.
			\$
1907 (9 months).	Arsenious oxide.	252,473	16,011
	Arsenic, Sulphide of.	95,843	6,116
			22,127
1908.	Arsenious oxide.	378,174	26,804
	Arsenic, Sulphide of.	125,322	7,531
			34,335

CALCIUM CARBIDE.

Statistics of the production of calcium carbide were collected by this Branch for the first time in 1908.

Three firms were engaged in the manufacture of this product, viz.—

The Shawenegan Carbide Co., Ltd., Shawenegan Falls, Que.

The Ottawa Carbide Co., Ltd., Ottawa, Ont.

The Wilson Carbide Co., Ltd., Merritton, Ont.

The total sales in 1908 were 6,864 tons valued at \$417,150, or an average per ton of \$60.77.

The production of calcium carbide in the Province of Ontario has been ascertained by the Ontario Bureau of Mines for a number of years, and the record is as follows :—

Calcium Carbide Production in Ontario.

Calendar Year.	Tons.	Value.	Per ton.	Calendar Year.	Tons.	Value.	Per ton.
		\$	\$ cts.			\$	\$ cts.
1900.	1,005	60,300	60 00	1905.	2,427	156,755	64 59
1901.	2,771	168,792	60 91	1906.	2,626	162,780	61 98
1902.	1,402	89,420	63 78	1907.	2,667	173,763	65 15
1903.	2,507	144,000	57 44	1908.	2,864	147,150	62 25
1904.	2,343	152,295	65 00				

CHALK AND WHITING.

These materials are not produced in Canada, but statistics of their importation are given to show the market for them in Canada.

Annual Imports of Chalk and Whiting, 1880-1908.

Fiscal Year.	Chalk (a).	Whiting (b).		Fiscal Year.	Chalk (a).	Whiting (b).	
	Value.	Cwt.	Value.		Value.	Cwt.	Value.
	\$		\$		\$		\$
1880	2,117	84,115	26,092	1895	7,730	102,751	25,441
1881	2,768	47,480	16,637	1896	6,467	113,791	27,322
1882	2,882	36,270	16,318	1897	7,432	102,453	22,541
1883	5,067	76,012	29,334	1898	9,338	166,293	25,761
1884	2,589	76,268	28,230	1899	10,461	134,884	34,310
1885	8,003	67,441	23,492	1900	12,212	127,455	34,575
1886	6,583	65,124	25,533	1901	11,629	209,868	60,878
1887	5,635	47,246	15,191	1902	11,337	153,982	42,136
1888	5,865	76,619	20,508	1903	16,497	139,804	39,867
1889	5,336	84,658	22,735	1904	19,163	186,919	42,507
1890	7,221	96,243	27,471	1905	20,896	198,485	51,215
1891	8,193	84,679	27,504	1906	23,853	160,030	44,876
1892	9,558	102,985	26,867	1907 (9 mos) ..	17,446	128,018	33,453
1893	9,966	88,835	25,563	1908	24,122	228,699	63,499
1894	11,308	103,633	26,649				

(a) Chalk prepared. Duty, 20 per cent. (b) Whiting or whitening, gilder's whiting, and Paris white. Duty free.

FELDSPAR.

Feldspar has been shipped during the past two years from mines in Frontenac county, in the townships of Bedford and Portland. The principal operator is the Kingston Feldspar and Mining Co., of Kingston, Ont., while shipments were also made in 1907 by the Verona Mining Co., with head office at 706 Girard Building, Philadelphia.

The total shipments reported in 1907 were 12,584 tons valued at \$29,819; while in 1908 the shipments had fallen off to 7,877 tons valued at \$21,099.

There have been occasional shipments of feldspar from deposits in Templeton and adjoining townships of Quebec Province, though none have been reported during the past two years.

Production and Exports of Feldspar.

Calendar Year.	Production.		Exports.	
	Tons.	Value.	Tons.	Value.
1890.....	700	\$ 3,500		\$
1891.....	685	3,425		
1892.....	175	525		
1893.....	575	4,525	50	500
1894.....	Nil.	Nil.	Nil.	Nil.
1895.....		*2,545		2,545
1896.....	972	*2,583	972	2,583
1897.....	1,400	3,290	3,078	5,637
1898.....	2,500	6,250	1,542	4,396
1899.....	3,000	6,000	1,757	5,126
1900.....	318	1,112	379	1,116
1901.....	5,350	10,700	4,367	10,973
1902.....	7,576	15,152	7,374	13,708
1903.....	13,928	18,966	13,760	23,319
1904.....	11,083	22,166	13,960	29,263
1905.....	11,700	23,400	9,161	27,660
1906.....	16,948	40,890	18,183	60,312
1907.....	12,584	29,819	12,068	37,932
1908.....	7,877	21,099	9,524	34,045

* Exports.

Uses of Feldspar.

The following notes on the uses of feldspar are taken from an article on the subject by E. S. Bastin, in the 'Mineral Resources of the United States, for 1907.'

"The principal consumers of feldspar are the pottery and enamelled brick and electrical ware manufacturers, its main application being as a constituent part of both body and glaze in true porcelain, white ware, and vitrified sanitary ware, and as a constituent of the slip (underglaze) and glaze in so-called 'porcelain' sanitary wares and enamelled brick. The proportion of feldspar in the body of vitrified wares usually falls between 10 and 35 per cent, though sometimes more. Its melting point being lower than that of the other constituents, it serves as a flux to bind the particles together. In glazes the percentage of feldspar usually lies between 30 and 50. The trade demands that feldspar for pottery purposes be nearly free from iron-bearing minerals (biotite, garnet, hornblende, tourmaline, etc.) and contain little if any muscovite. In regard to the percentage of free quartz, the requirements vary with different potters. A few manufacturers of the finer grades of pottery demand less than 5 per cent of free quartz, and may even grind the spar themselves so as to be sure of its quality, preferring to ensure a constant product, even at higher cost, by themselves mixing the requisite quantity of quartz with the spar. Most potters get satisfactory results with 'Standard' ground spar carrying 15 to 20 per cent of free quartz, and in some cases the percentage runs even higher. In the finely ground mixture as it comes from the mills it is difficult to separate the quartz from the feldspar by physical methods on

account of the extreme fineness of the material. Chemical analysis seems to be the readiest means of determining whether its percentage is high or low.

"Feldspar is also used in emery and carborundum wheel manufacture as a flux to bind the abraiding particles together.

"Small quantities of feldspar are used in the manufacture of opalescent glass. The feldspar used for this purpose is ranked as No. 3 by the miners; it usually contains more free quartz and muscovite than that used for pottery purposes, and in most cases also contains fragments of iron-bearing minerals. Most of the spars known to the writer which are used for opalescent glass are notably richer in soda than in potash. They are usually ground only to a fineness of 50 to 60 mesh.

"Small quantities of carefully selected pure feldspar are used in the manufacture of artificial teeth. Some is used in the manufacture of scouring soaps and window washes, the fact that feldspar is slightly softer than glass rendering these soaps less liable to scratch windows or glassware than are the soaps in which quartz is the abrasive substance. One firm in New York State crushes pegmatite for poultry grit and for a covering for concrete and tarred surfaces to give the appearance of granite."

FLUORSPAR.

The occurrence of fluorspar has been noted on lot 1, concession IV of Madoc township, Hastings county, Ont., and some very fine crystals have been obtained from this deposit. In 1905 the deposit was opened by S. Wellington of Madoc, and a shipment of 12 tons made to Port Hope. No further shipments have been reported.

MAGNESITE.

The occurrence of magnesite in the township of Grenville, Argenteuil county, was recognized about eight years ago. A couple of tons were shipped in 1904 for experimental tests by Mr. M. B. McAllister, of Ottawa, and numerous samples were collected and analysed in the laboratory of the Geological Survey, a complete report on which will be found in the Annual Report of the Geological Survey, Vol. XIII, Part R. In 1907, Mr. T. J. Watters, of Ottawa, acquired the north half of lot 18, range XI of Grenville, and undertook some prospecting and development. About 120 tons, valued at \$7 per ton, were shipped in 1908, finding a market in Montreal, Pittsburgh, and New York. Another 100 tons were produced but not shipped. The property is now in the hands of the Canadian Magnesite Co. of Montreal, and a large increase in shipments is expected in 1909.

10,084—17½

QUARTZ.

According to statistics published by the Ontario Bureau of Mines the production of quartz in that Province in 1908 was 44,741 tons valued at \$52,830, as compared with 56,585 tons valued at \$124,148 in 1907.

A record of quartz production, as far as has been ascertained, is shown in the following table. The greater part of the production shown for the past three years is represented by the material mined by the Canadian Copper Co. near Naughton, and used as a flux and for furnace linings in smelting the nickel-copper ores of the Sudbury district.

At the Richardson feldspar mine in Bedford township quartz is also being mined and shipped to Welland, Ont., about 6,000 tons having been thus shipped during the winter months of 1908-9. This quartz is used at Welland by the manufacturers of ferro-silicon.

Annual Production of Quartz.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1890.....	200	1,000	1899.....	600	1,260
1891-2.....			1900-1905.....		
1893.....	100	500	1906.....	48,376	65,765
1894-5-6.....	10	50	1907.....	56,585	124,148
1897.....			1908.....	44,741	52,830
1898.....	284	570			

Imports of Silex :—Crystallized Quartz.

Fiscal Year.	Cwt.	Value.	Fiscal Year.	Cwt.	Value.
		\$			\$
1880.....	5,252	2,290	1895.....	2,882	1,881
1881.....	3,251	1,659	1896.....	3,289	2,174
1882.....	3,283	1,678	1897.....	2,564	3,415
1883.....	3,543	2,058	1898.....	3,104	2,773
1884.....	3,259	1,709	1899.....	3,951	2,595
1885.....	3,527	1,443	1900.....	4,021	2,876
1886.....	2,520	1,313	1901.....	3,562	2,106
1887.....	14,533	5,073	1902.....	4,388	3,858
1888.....	4,808	2,385	1903.....	3,514	2,762
1889.....	5,130	1,211	1904.....	5,547	4,409
1890.....	1,768	2,617	1905.....	8,931	8,475
1891.....	3,674	1,929	1906.....	7,465	8,347
1892.....	1,429	1,244	1907 (9 mos.).....	11,964	12,969
1893.....	2,447	1,301	1908.....Duty free.	24,938	19,166
1894.....	2,451	1,521			

TALC.

The production of talc during the past three years has varied from 1,000 to 1,500 tons per annum; a value of about \$3 per ton being placed upon the talc at the mine.

The production in recent years has all been derived from the Henderson talc mine in the township of Madoc, county of Hastings. Formerly the output was exported to United States points and used chiefly in the manufacture of cosmetics. Recently, however, a mill has been erected at Madoc for grinding the crude talc and preparing it for the trade. Most of the finished material is now sold in Canada, and the greater part used in the paper trade.

Statistics of production of soapstone and talc since 1886 are as follows :—

Annual Production of Soapstone and Talc.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	50	400	1898 ...	405	1,000
1887.....	100	800	1899.....	450	1,960
1888.....	140	280	1900.....	1,420	6,365
1889.....	195	1,170	1901.....	259	842
1890.....	917	1,239	1902.....	689	1,804
1891.....	Nil	Nil	1903.....	990	2,739
1892.....	1,374	6,240	1904.....	840	1,875
1893.....	717	1,920	1905.....	500	1,800
1894.....	916	1,640	1906.....	1,234	3,030
1895.....	475	2,138	1907.....	1,534	4,602
1896.....	410	1,230	1908.....	1,016	3,048
1897.....	157	350			

STRUCTURAL MATERIALS AND CLAY PRODUCTS.

The structural or building materials included under this heading comprise, in the order treated, cement, clay products of various kinds such as brick, pottery, sewer pipe and tile, etc.; lime, stone, comprising ordinary building stone, flagstones, granite, etc.; slate, silica brick, and sand and gravel.

CEMENT.

The production of natural rock cement, which was at one time an important factor in the Canadian cement industry, has rapidly decreased during recent years, and practically ceased in 1908. During this year there was no actual manufacture of natural rock cement, a few barrels only being sold from stock held over from the previous year. The production of Portland cement, on the

other hand, has shown an extremely rapid growth, having increased over ten fold during the past ten years. Statistics of the total annual sales of natural rock and Portland cement are shown in the following table :—

Annual Production of Cement.*

Calendar Year.	Natural Rock Cement.		Portland Cement.		Totals.	
	Bls.	Value.	Bls.	Value.	Bls.	Value.
		\$		\$		\$
1887.					69,843	81,909
1888.					50,668	35,593
1889.	90,474	69,790	Nil.	Nil.	90,474	69,790
1890.	87,521	74,822	14,695	17,583	102,216	92,405
1891.	90,846	103,479	2,633	5,082	93,479	108,561
1892.	88,187	94,912	29,221	52,751	117,408	147,663
1893.	126,673	130,167	31,924	63,848	158,597	194,015
1894.	72,965	74,842	35,177	69,795	108,142	144,637
1895.	66,219	60,795	62,075	112,880	128,294	173,675
1896.	70,705	60,500	73,385	141,151	149,090	201,651
1897.	85,450	65,893	119,763	209,380	205,213	275,273
1898.	87,125	73,412	163,084	324,168	250,209	397,580
1899.	147,387	119,308	255,366	513,983	396,753	633,291
1900.	125,428	99,994	292,124	562,916	417,552	662,910
1901.	133,328	94,415	317,066	565,615	450,394	660,030
1902.	127,931	98,932	594,594	1,028,618	722,525	1,127,550
1903.	92,252	74,655	627,741	1,150,592	719,993	1,225,247
1904.	56,814	50,247	910,358	1,287,992	967,172	1,338,239
1905.	14,184	10,274	1,346,548	1,913,740	1,360,732	1,924,014
1906.	8,610	6,052	2,119,764	3,164,807	2,128,374	3,170,859
1907.	5,775	4,043	2,436,093	3,777,328	2,441,868	3,781,371
1908.	1,044	815	2,665,289	3,709,139	2,666,333	3,709,954

*Quantities sold or shipped.

According to returns (received from the manufacturers) the total quantity of Portland cement made in Canada in 1908 was 3,495,961 barrels of 350 pounds net; as compared with 2,491,513 barrels in 1907, or an increase of 1,004,448 barrels; or 40·3 per cent.

The total quantity of Canadian Portland cement sold in 1908 was 2,665,289 barrels as compared with 2,436,093 barrels in 1907, or an increase of 229,196 barrels or 9·4 per cent.

The total consumption of Portland cement in 1908, including Canadian and imported cements, was 3,134,338 barrels (of 350 pounds net); as compared with 3,108,723 barrels in 1907, or an increase of 25,615 barrels or 0·8 per cent.

In addition to the above, other important statistical returns respecting the stocks on hand at the beginning and end of the year, the total value and average price per barrel, the number of men employed and wages paid, the quantity and value of the imports, etc., for the years 1907 and 1908, are shown in comparative form in the following table :—

Comparisons of Production, Sales, and Imports of Portland Cement in 1907 and 1908.

	1907.	1908.	Increase.	%	Decrease.	%
Cement sold..... Bls.	2,436,093	2,665,289	229,196	9.4		
Cement manufactured..... "	2,491,513	3,495,961	1,004,448	40.3		
Stock on hand, Jan. 1..... "	299,015	383,349	84,334	28.2		
" " Dec. 31..... "	354,435	1,214,021	859,586	242.5		
Value of cement sold..... \$	3,777,328	3,709,139			68,189	1.8
Average price per bl..... \$	1.55	1.39			0.16	10.3
Wages paid..... \$	956,080	1,275,638	319,558	33.4		
Men employed..... No.	1,786	3,029	1,243	69.6		
Imports of Portland cement.. Bls.	672,630	469,049			203,581	30.3
Value of cement..... \$	837,520	531,045			306,475	36.6
Average price per bl..... \$	1.24	1.13			0.11	8.9
Total consumption of cement in Canada..... Bls.	3,108,723	3,134,338	25,615	0.8		
No. of completed plants operated. ..	17	23	6	35.3		
Total daily capacity of operating plants as at Dec. 31..... Bls.	14,400	27,500	13,100	90.9		

The production of Portland cement in 1908 was derived from 23 operating plants, with a total daily capacity of 27,500 barrels, equivalent to about 8,250,000 barrels per year of 300 days, or 10,000,000 if all plants were run continuously for the whole year. The operating plants were distributed as follows: one in Nova Scotia using blast furnace slag; one in Manitoba making a natural Portland cement; one in British Columbia, two in Alberta and three in Quebec using limestone and clay; and fifteen in Ontario, of which 12 use marl and 3 limestone. The total daily capacity of the plants using marl was 10,400 barrels, as compared with 17,100 barrels per day for all other plants. Of the total quantity of cement made in 1908, 1,573,090 barrels were made from marl, and 1,922,871 barrels from limestone and slag.

It is not possible to give the detailed production in all the provinces without divulging confidential returns. The following groupings, however, may be made: (1) Qusbec and Nova Scotia; (2) Ontario; (3) Alberta, Manitoba, and British Columbia.

The production in these groups in 1907 and 1908 was as follows:—

(1) Quebec and Nova Scotia.

	1907.	1908.	Increase.	%	Decrease.	%
Cement sold. Bls.	456,579	749,021	292,442	64.1		
Cement manufactured. "	456,625	953,712	497,087	108.9		
Stock on hand, Jan. 1. "	40,200	40,246	46	0.1		
Stock on hand, Dec. 31. "	40,246	244,937	204,691	508.6		
Value of cement sold. \$	664,866	1,051,144	386,278	58.1		
Wages paid. \$	104,116	293,855	189,739	182.2		
Men employed. No.	305	795	460	150.8		
Total daily capacity of operating plants. Bls.	2,300	7,900	5,600	243.5		

(2) Ontario.

	1907.	1908.	Increase.	%	Decrease.	%
Cement sold. Bls.	1,775,484	1,518,886				
Cement manufactured. "	1,816,662	2,016,737	200,075	11.0	256,598	14.5
Stock on hand, Jan. 1. "	242,248	314,579	72,331	29.9		
Stock on hand, Dec. 31. "	283,426	812,430	529,004	186.6		
Value of cement sold. \$	2,705,167	1,909,815			795,352	29.4
Wages paid. \$	684,964	636,955			48,009	7.0
Men employed. No.	1,192	1,619	427	35.8		
Total daily capacity of operating plants. Bls.	9,400	14,900	5,500	58.5		

(3) Manitoba, Alberta, and British Columbia.

	1907.	1908.	Increase.	%	Decrease.	%
Cement sold. Bls.	204,030	397,382	193,352	94.8		
Cement manufactured. "	218,226	525,512	307,286	140.8		
Stock on hand, Jan. 1. "	16,567	28,524	11,957	72.2		
Stock on hand, Dec. 31. "	30,763	156,654	125,891	409.2		
Value of cement sold. \$	407,295	748,180	340,885	83.7		
Wages paid. \$	167,000	344,828	177,828	106.5		
Men employed. No.	289	615	326	112.8		
Total daily capacity of operating plants. Bls.	2,700	4,700	2,000	74.1		

Prices:—As already stated, the average price at the works during 1908, as returned by the manufacturers, was \$1.39 per barrel. Prices in car lots, ex-package, at Toronto and Montreal, according to trade quotations, ranged from \$1.90 in January to as low as \$1.55 in December. In Winnipeg prices ruled during the latter half of the year at about \$2.40.

Statistics of the annual production of Portland cement for a number of years, showing the quantity made, the quantity sold, stock on hand at the end of the year, value of sales, etc., are shown in the next table:—

Annual Production of Portland Cement.

Year.	Quantity Made.	Quantity Sold.	On hand Dec. 31.	Value of Sales.	Average per barrel.	Daily Capacity.
	Barrels.	Barrels.	Barrels.	\$	¢	Barrels.
1897.....		119,763		209,380	1 75	
1898.....		163,084		324,168	1 99	
1899.....		255,866		513,983	2 01	
1900.....		292,124		562,916	1 91	
1901.....	360,160	317,066	58,094	565,615	1 78	
1902.....	562,335	594,594	33,446	1,028,618	1 73	3,900
1903.....	714,136	627,741	128,386	1,150,592	1 83	4,850
1904.....	908,990	910,358	112,051	1,287,992	1 41	
1905.....	1,541,568	1,346,548	306,466	1,913,740	1 42	8,000
1906.....	2,152,562	2,119,764	302,356	3,164,807	1 49	10,500
1907.....	2,491,513	2,436,093	354,435	3,777,328	1 55	14,400
1908.....	3,495,961	2,665,289	1,214,021	3,709,139	1 39	27,500

Imports and Exports:—There is very little cement exported from Canada; only \$34,591 worth being recorded for 1908. The imports of Portland cement, which were, previous to 1904, larger than the Canadian production, have been decreasing since 1906, and were in 1908 equivalent to only 17·6 per cent of the sales of Canadian cement, or 14·9 per cent of the total consumption. A duty of 12½ cents per 100 pounds, equivalent to 43¾ cents per barrel of 350 pounds net, is levied on imports. The weight of the package is, however, included for purposes of duty.

The imports of cement during 1907 and 1908 by countries were as follows:—

	1907.			1908.		
	Cwt.	%	Value.	Cwt.	%	Value.
			\$			\$
Great Britain.....	1,003,444	42·6	343,817	601,527	36·6	202,139
United States.....	1,134,113	48·2	431,343	902,576	55·0	283,899
Belgium.....	182,943	7·8	50,476	128,738	7·8	40,856
Other countries.....	33,704	1·4	11,884	8,831	0·5	4,151
Totals.....	2,354,204	100	837,520	1,641,672	99·9	531,045
Equivalent in barrels.....	672,630			469,049		

Statistics of the exports of cement since 1891, and of the imports since 1880, are given in the two following tables:—

Exports of Cement.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1891.....	2,881	1897.....	644	1903.....	2,851
1892.....	938	1898.....	2,117	1904.....	5,494
1893.....	1,172	1899.....	2,733	1905.....	3,143
1894.....	482	1900.....	3,296	1906.....	7,551
1895.....	937	1901.....	1,514	1907.....	9,618
1896.....	1,328	1902.....	2,267	1908.....	34,591

Imports of Cement into Canada.

Fiscal Year.	Cement, N.E.S.* Bulk or bags.	Hydraulic Cement.		Portland Cement.	
		Barrels.	Value.	Barrels.	Value.
			\$		\$
1880.....	28	10,034	10,306		55,774
1881.....	298	7,812	7,821		45,646
1882.....	86	11,945	13,410		66,579
1883.....	548	11,659	13,755		102,537
1884.....	1,236	8,606	9,514		102,857
1885.....	1,315	5,613	5,396		111,521
1886.....	1,851	6,164	6,028		120,398
1887.....	1,419	6,160	8,784	102,750	148,054
1888.....	5,787	5,636	7,522	122,402	177,158
1889.....	10,668	5,835	7,467	122,273	179,406
1890.....	5,443	5,440	9,048	192,322	313,572
1891.....	2,890	3,515	6,152	183,728	304,648
1892.....	3,394	2,214	2,782	187,233	281,553
1893.....	2,909	4,896	8,060	229,492	316,179
1894.....	2,618	1,054	985	224,150	280,841
1895.....	2,112	5,333	7,001	196,281	242,813
1896.....	3,672	5,688	8,948	204,407	242,409
1897.....	4,318	2,494	3,937	210,871	252,587
		Cwt.		Cwt.	
1898.....	3,263	16,033	7,097	1,073,058	355,264
1899.....	8,929	1,678	694	1,300,424	467,994
1900.....	10,452	10,418	4,711	1,301,361	498,607
1901.....	4,890	17,784	6,865	1,612,432	654,595
1902.....	12,234	29,585	17,755	1,971,616	833,657
1903.....	16,281	13,690	6,333	2,316,853	868,131
1904.....	14,305	12,088	5,391	2,476,388	995,017
1905.....	18,489	16,961	10,690	4,228,394	1,234,649
1906.....	27,858	10,794	4,034	2,848,582	963,839
1907 (9 mos.).....	16,201	1,192	685	1,551,493	523,120
1908.....	12,418	18,860	6,710	2,427,381	852,041

*Cement not elsewhere specified and manufactures of cement.

As there is very little cement exported from Canada, the consumption is practically represented by the Canadian sales together with the imports. On this basis, the total consumption of Portland cement in Canada in 1908 was 3,134,338

barrels (548,509 tons), made up of 2,665,289 barrels (466,426 tons) of Canadian cement, or 85 per cent, and 469,049 barrels (82,083 tons) of imported cement, or 15 per cent. As already indicated, 55 per cent of the imported cement came from the United States, and 36 per cent from Great Britain, and nearly 8 per cent from Belgium.

In 1907 the total consumption was 3,108,723 barrels (544,027 tons), of which 78 per cent was made in Canada and 22 per cent imported.

In 1901 the total consumption was 872,966 barrels (152,769 tons), of which only 36 per cent was made in Canada and 64 per cent was imported.

Following is an estimate of the consumption of Portland cement in Canada during the past eight years:—

Annual Consumption of Portland Cement.

Calendar Year.	Canadian.		Imported.		Total.
	Barrels.	%	Barrels.	%	Barrels.
1901.....	317,066	36	555,900	64	872,966
1902.....	594,594	52	544,954	48	1,139,548
1903.....	627,741	45	773,678	55	1,401,419
1904.....	910,358	54	784,630	46	1,694,988
1905.....	1,346,548	59	918,701	41	2,265,249
1906.....	2,119,764	76	665,845	24	2,785,609
1907.....	2,436,093	78	672,630	22	3,108,723
1908.....	2,665,289	85	469,049	15	3,134,338

The firms engaged in the manufacture of Portland cement in 1908 were as follows:—

Name.	Plant at	Head Office at
The Sydney Cement Co., Ltd.....	Sydney, N. S.....	Sydney, C.B.
The International Portland Cement Co., Ltd.....	Hull, Que.....	Ottawa, Ont.
Vulcan Portland Cement Co., Ltd.....	Longue Pointe, Que.....	Montreal, Que.
Lakefield Portland Cement Co.....	(Pointe aux Trembles, Que.....	" "
	(Lakefield, Ont.....	
	(Port Colborne, Ont.....	
Canadian " ".....	(Marlbank, Ont.....	Toronto, Ont.
Belleveille " ".....	Point Ann, Ont.....	Belleveille, Ont.
The Imperial Cement Co., Ltd.....	Owen Sound, Ont.....	Owen Sound, Ont.
Grey & Bruce Portland Cement Co.....	" ".....	" "
Owen Sound Portland Cement Co., Ltd.....	" ".....	" "
The Sun " ".....	Keppel tp., Ont.....	" "
Hanover " ".....	Hanover, Ont.....	Hanover, Ont.
The Ontario " ".....	Blue Lake, Ont.....	Brantford, Ont.
National " ".....	Durham, Ont.....	Durham, Ont.
Lehigh " ".....	Belleveille, Ont.....	Allentown, Pa.
The Colonial " ".....	Keppel tp., Ont.....	Wiaraton, Ont.
Superior " ".....	Orangeville, Ont.....	Orangeville, Ont.
The Western Ontario Portland Cement Co., Ltd.....	Atwood, Ont.....	Atwood, Ont.
The Commercial Cement Co., Ltd.....	Babcock, Man.....	Winnipeg, Man.
The Alberta Portland Cement Co., Ltd.....	Calgary, Alta.....	Calgary, Alta.
The Western Canada Coal & Cement Co.....	Exshaw, Alta.....	Ottawa, Ont.
Vancouver Portland Cement Co.....	Tod Inlet, B.C.....	Victoria, B.C.

Companies with plants in process of erection and companies proposing to erect plants :—

The Eastern Canada Portland Cement Co.	Quebec	Ottawa (Irvin).
The Lake Medal	"	Hamilton.
The Bell's Lake	"	Markdale.
The Brant	"	Brantford.
The Ben Allen	"	Owen Sound.
The Manitoba Cement Co.	(Not erected yet)	Winnipeg.
The Rocky Mountain Cement Co.	Blairmore	Blairmore, Alta.
The Raven Lake Portland Cement Co.		Victoria Road.

CLAY PRODUCTS.

The clay products produced in Canada comprise bricks of various kinds, including common, pressed, paving, ornamental or fancy, and firebrick, porous fireproofing bricks and blocks, sewer pipe, drain tile, and pottery. Owing to the large number of manufacturers, there being about 600, and the indifference of many in answering circular inquiries, the statistics of production are more or less incomplete. The statistics given represent actual sales ; material produced but held in stock until the end of the year not being recorded until disposed of.

According to the returns received, the total value of the clay products sold in 1908 was \$4,871,403, as compared with a total valuation in 1907 of \$5,772,117, a decrease of \$900,714 or 16 per cent. The total value of the clay products sold in 1906 was \$5,072,635, and in 1905 it was \$4,695,925. As about 75 per cent of the total production consists of brick, the decreased sales in 1908 were no doubt due in large measure to the restriction of building operations in that year as a result of the general business depression, and also following the unusual activity in building operations during 1907 :—

The production in detail during two years was as follows :—

Production of Clay Products, 1907 and 1908.

	1907.			1908.		
	Quantity.	Value.	Per M	Quantity.	Value.	Per M
Bricks—		\$	\$ cts.		\$	\$ cts.
Common..... No.	439,015,556	3,455,524	7 87	408,305,768	2,982,255	7 31
Pressed. "	78,922,092	794,722	10 07	53,480,764	517,180	9 67
Paving. "	3,617,720	72,354	20 00	3,719,961	59,456	15 98
Ornamental.		47,288			18,535	
Firebrick and fireclay shapes, etc.		131,322			110,302	
Other clay bricks and blocks.		89,389			170,211	
Pottery.		253,809			200,541	
Sewer pipe.		667,100			514,362	
Tiles, drain.		260,609		20,100,261	298,561	14 85
Totals.		5,772,117			4,871,403	

Practically all our productions of clay find a market in Canada, the only export recorded being brick, of which there were exported in 1907 about 802,000 valued at \$6,193, and in 1908, 2,344,000 valued at \$9,047. In addition to our own production we import for our consumption a very large value in clay products, including building and paving brick, tile and sewer pipe; also earthenware and chinaware of various kinds. The total value of these imports during the fiscal period of 1907 (9 months) was \$2,371,806, and during the fiscal year 1908 (12 months), it was \$3,538,060.

Imports of Clay Products, Fiscal Years 1907 and 1908.

Imports of.	1907 (9 mos.)	1908.
	\$	\$
Brick and Tiles—		
Bath brick.....	1,076	1,834
Building brick	88,144	139,105
Paving brick.....	23,256	61,346
Firebrick and stove linings, N.E.S.....	157,616	.....
Firebrick of a kind not made in Canada.....	349,185 (a)	639,347
Drain tile, not glazed.....	12,106	2,080
Drain pipe, sewer pipe, etc.....	93,458	125,747
Mfgs. of clay, N.O.P.....	45,845	110,097
	770,686	1,079,556
Earthenware and Chinaware—		
Brown coloured.....	9,625	22,847
Demijohns, churns, and crocks.....	3,342	17,836
Tableware of china, porcelain, white granite.....	902,798	1,555,517
China and porcelain.....	134,675	109,446
Tiles or blocks of.....	62,547	45,836
Earthenware tiles, N.O.P.....	67,027	116,480
Mfgs. of earthenware, N.O.P.....	81,987	83,509
Earthenware, N.O.P.....	154,879	239,513
	1,422,880	2,190,784
Clays—		
China clay.....	78,772	97,236
Fireclay.....	85,044	156,873
Pipe-clay.....	307	319
Clays, all other, N.O.P.....	14,117	14,292
	178,240	267,720
Grand total	2,371,806	3,538,060

(a) In 1907, classified as "for use in process of manufactures."

Clay Building Brick: The total production of clay building brick, including the common and pressed varieties, but excluding ornamental, paving, and firebrick, is shown by provinces for the years 1907 and 1908 in the next table.

In 1907 the total production was 517,937,648 valued at \$4,250,246, comprising 439,015,556 common brick valued at \$3,455,524, or an average value per thousand of \$7.87; and 78,922,092 pressed brick valued at \$794,722, or an average value per thousand of \$10.07.

In 1908 the total production was 461,786,532 valued at \$3,499,435, made up of 408,305,768 common brick valued at \$2,982,255, or an average value of \$7.30 per thousand; and 53,480,764 pressed brick valued at \$517,180, or an average value per thousand of \$9.67.

COMPARISON TABLE SHOWING TOTAL BRICK SALES BY PROVINCES.

Production of Clay Building Brick (Common and Pressed) 1907 and 1908.

	1907.		1908.	
		\$		\$
Nova Scotia	19,646,000	110,338	9,125,000	56,064
New Brunswick.....	4,941,141	36,937	6,594,011	54,573
Quebec.....	104,394,709	715,922	145,711,677	972,575
Ontario.....	287,930,763	2,311,499	221,600,575	1,664,184
Manitoba.....	45,094,180	465,282	26,818,000	254,591
Saskatchewan.....	12,024,970	125,459	8,262,996	87,566
Alberta.....	31,384,740	353,672	25,521,911	240,336
British Columbia	12,522,045	131,137	18,152,362	169,546
Totals.....	517,937,648	4,250,246	461,786,532	3,499,435

Prices :—The price of brick is somewhat lower in the eastern parts of Canada than in the west. The average price of common brick in 1907 ranged between a minimum of \$5.47 in Nova Scotia and a maximum of \$10.67 in Alberta. In 1908 prices in the Maritime provinces and in Quebec were apparently somewhat higher than in 1907 ; while in Ontario and the western provinces lower prices prevailed in 1908.

The following table shows the average prices of common and pressed brick in the several provinces during 1907 and 1908.

Average Prices per Thousand of Common and Pressed Brick.

	Common Brick.		Pressed Brick.	
	1907.	1908.	1907.	1908.
Nova Scotia	\$ 5.47	\$5.81	\$12.53	\$13.84
New Brunswick.....	7.45	8.17	8.21	16.70
Quebec.....	6.43	6.51	11.60	11.62
Ontario.....	7.61	7.24	9.45	8.74
Manitoba.....	10.19	9.24	13.67	15.45
Saskatchewan.....	10.43	10.46	.....	11.18
Alberta.....	10.67	8.60	17.89	12.97
British Columbia	10.45	9.21	20.95	20.40
Canada.....	7.87	7.31	10.07	9.67

The exports and imports of building brick since 1891 and 1880 respectively are shown in the two following tables. The exports have never been large, averaging for a number of years past about \$6,000 in value per annum. For a number of years previous to 1903 the annual imports of building brick averaged only about \$20,000 in value; during the past five years, however, the value of the imports has varied from \$100,000 to nearly \$200,000 per annum.

Exports of Building Bricks.

Calendar Year.	M.	Value.	Calendar Year.	M.	Value.
		\$			\$
1891.....	246	1,163	1900.....	546	4,528
1892.....	1,963	12,192	1901.....	646	5,189
1893.....	6,073	44,110	1902.....	2,110	12,786
1894.....	1,095	7,405	1903.....	891	5,699
1895.....	1,655	8,665	1904.....	696	5,357
1896.....	983	5,678	1905.....	754	5,888
1897.....	573	2,679	1906.....	697	6,541
1898.....	65	442	1907.....	802	6,193
1899.....	172	1,351	1908.....	2,344	9,047

Imports of Building Brick.

Fiscal Year.	M.	Value.	Fiscal Year.	M.	Value.
		\$			\$
1880.....	340	2,067	1895.....	575	4,705
1881.....	415	4,281	1896.....	1,057	23,189
1882.....	3,500	24,572	1897.....	2,094	10,336
1883.....	1,448	14,234	1898.....	639	6,652
1884.....	3,263	20,258	1899.....	2,611	21,306
1885.....	3,108	14,632	1900.....	1,792	19,305
1886.....	983	5,929	1901.....	2,800	20,677
1887.....	276	2,440	1902.....	4,087	33,802
1888.....	2,483	20,720	1903.....	2,881	28,493
1889.....	2,590	24,585	1904.....	13,455	117,468
1890.....	1,933	12,500	1905.....	25,515	168,122
1891.....	589	9,744	1906.....	21,934	194,897
1892.....	621	5,075	1907 (9 months).....	8,495	88,144
1893.....	1,489	14,108	1908.....	13,790	139,105
1894.....	2,220	18,320			

The annual production of building brick in Ontario, ascertained by the Bureau of Mines, is shown in the following table. The figures show the total quantity and value of the brick made as distinguished from the sales.

Building Brick made in Ontario since 1898.

(From the reports of the Ontario Bureau of Mines.)

	COMMON BRICK.			PRESSED BRICK.		
	M.	Value.	Average per M.	M.	Value.	Average per M.
		\$	\$ cts.		\$	\$ cts.
1898.....	170,000	914,000	5 376	8,970	100,344	11 187
1899.....	233,898	1,313,750	5 617	10,808	105,000	9 715
1900.....	240,430	1,379,590	5 738	11,562	114,419	9 896
1901.....	259,265	1,530,460	5 903	12,846	104,394	8 127
1902.....	220,500	1,411,000	6 399	19,755	144,171	7 298
1903.....	230,000	1,561,700	6 790	23,703	218,550	9 220
1904.....	200,000	1,430,000	7 150	26,857	226,750	8 443
1905.....	250,000	1,937,500	7 750	26,000	234,000	9 000
1906.....	300,000	2,157,000	7 190	39,860	337,795	8 475
1907.....	273,882	2,109,978	7 704	69,763	648,683	9 298
1908.....	222,361	1,575,875	7 087	56,167	485,819	8 649

Paving Brick: Statistics of the production of paving brick have been recorded since 1897; the average price per thousand has varied from \$8 to \$20.

In 1908 the number of paving brick sold was 3,719,961 valued at \$59,456; while during the fiscal year ending March of 1908 there were imported 5,340,000 brick valued at \$61,346, or an average per M. of \$11.49.

Paving brick are all made in the Province of Ontario.

Statistics of production and imports are shown in the two tables following:—

Annual Production of Paving Brick (a).

Year.	M.	Value.	Average per M.	Year.	M.	Value.	Average per M.
		\$	\$ cts.			\$	\$ cts.
1897.....	4,568	45,670	10 00	1903.....	3,789	45,288	11 95
1898.....				1904.....	4,436	55,450	12 50
1899.....	5,300	42,550	8 03	1905.....	4,500	54,000	12 00
1900.....	2,710	26,950	9 94	1906.....	3,000	45,000	15 00
1901.....	3,689	37,000	10 03	1907.....	3,618	72,354	20 00
1902.....	4,211	42,000	9 97	1908.....	3,720	59,456	15 98

(a) Figures previous to 1907 compiled from Ontario Bureau of Mines.

Imports of Paving Brick.*

Year.	M.	Value.	Average per M.	Year.	M.	Value.	Average per M.
		\$	\$ cts.			\$	\$ cts.
1895.	275	5,006	18 20	1902.	1,030	16,788	16 30
1896.	913	10,132	11 04	1903.	1,337	18,811	14 07
1897.	52	719	13 83	1904.	1,986	29,753	14 98
1898.	367	2,337	6 37	1905.	2,350	32,578	13 86
1899.	1,583	23,648	14 94	1906.	4,104	46,008	11 21
1900.	2,175	35,644	16 39	1907 (9 mos) . .	2,182	23,256	10 66
1901.	900	10,414	11 57	1908.	5,340	61,346	11 49

* Duty 20 per cent.

Fireclay and Firebrick: Firebrick are made from native clays at Westville, N.S., by the Intercolonial Coal Mining Company; at Moosejaw, Sask., by the Moosejaw Fire Brick and Pottery Co.; and at Clayburn, near Vancouver, B.C., by the Vancouver Fireclay Co., Ltd.

Fireclay obtained from the Wellington colliery at Comox, Vancouver island, is shipped to Victoria and used by the B. C. Pottery Co. in the manufacture of firebrick and other fireclay products. This firm also manufactures sewer pipe, drain tile, flowerpots, etc. The Wellington Colliery Co. produced and shipped 4,949 tons of fireclay during 1908.

Firebrick and fireclay shapes are also manufactured at Montreal, and at St. Johns, Que., but from imported fireclays.

The total value of the production of fireclay products in 1908 was returned as \$110,302, comprising 2,415,871 firebrick valued at \$70,429, or an average of \$29.16 per M.: fireclay sold, 1,984 tons valued at \$8,121, and other fireclay products valued at \$31,752.

In 1907 the total production as returned was valued at \$131,322, made up of 4,323,179 firebrick valued at \$113,322, or an average of \$26.21 per M.; and other fireclay shapes to the value of \$18,000.

Sewer Pipe and Drain Tile: The total value of the sales of sewer pipe in 1908 was \$514,362; as compared with a value of \$667,100 in 1907, and a value of \$530,045 in 1906.

The imports of drain pipe and sewer pipe, etc., during the twelve months ending March 1908, were valued at \$125,747. Of this amount \$104,128 worth were imported from the United States, and \$21,619 from Great Britain.

Following is a list of firms manufacturing sewer pipe:—

Standard Drain Pipe Co. of St. Johns	-	{ New Glasgow, N. S. St. Johns, Que.
Ontario Sewer Pipe Co.	- - -	Toronto, Ont.
Dominion Sewer Pipe Co.	- - -	"
Hamilton & Toronto Sewer Pipe Co., Ltd.	-	Hamilton, Ont.
B. C. Pottery Co.	- - -	Victoria, B.C.

The sales of drain tile in 1908, as reported to this Branch, were 20,100,261 valued at \$293,561, an average of \$14.85 per M. The Ontario Bureau of Mines, however, reports the total quantity made in that Province as 24,800,000 valued at \$338,658, or an average value of \$13.66 per M. The imports of unglazed drain tile are comparatively small, being valued at only \$2,080 during the fiscal year 1908.

Statistics of the production of sewer pipe and of the imports of drain tile and sewer pipe are shown in the next two tables:—

Production of Sewer pipe, etc.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1888.....	266,320	1895.....	257,045	1902.....	301,965
1889.....	Not available.	1896.....	153,875	1903.....	317,970
1890.....	348,000	1897.....	164,250	1904.....	440,894
1891.....	227,300	1898.....	181,717	1905.....	382,000
1892.....	367,660	1899.....	161,546	1906.....	530,045
1893.....	350,000	1900.....	231,525	1907.....	667,100
1894.....	250,325	1901.....	248,115	1908.....	514,362

Imports of Drain Tile and Sewer Pipe.

Fiscal Year.	Drain Tile (a).	Sewer Pipe (b).	Fiscal Year.	Drain Tile (a).	Sewer Pipe (b).
	\$	\$		\$	\$
1880.....		33,796	1895.....	695	20,358
1881.....		37,368	1896.....	339	18,957
1882.....		70,061	1897.....	416	33,870
1883.....		70,699	1898.....	157	29,454
1884.....	5,585	66,170	1899.....	1,827	32,071
1885.....	2,911	66,678	1900.....	1,383	37,766
1886.....	1,905	56,048	1901.....	1,264	54,819
1887.....	2,183	69,020	1902.....	269	55,261
1888.....	4,290	96,967	1903.....	252	57,100
1889.....	2,346	80,869	1904.....	1,637	53,958
1890.....	3,780	73,654	1905.....	1,229	101,166
1891.....	673	86,522	1906.....	4,727	131,353
1892.....	473	59,064	1907 (9 mos.).....	12,106	93,458
1893.....	110	38,891	1908.....	2,080	125,747
1894.....	53	24,572			

(a) Drain tile not glazed.

(b) Drain pipes, sewer pipes, chimney linings, or vents, chimney tops and inverted blocks, glazed or unglazed.

Pottery and Earthenware: The pottery produced from Canadian clays is chiefly of the poorest grades, such as flowerpots, etc. There are several manufacturers of pottery of the more expensive grades, of which a number are located at St. Johns and Iberville, Que., but these use imported clays.

Statistics of the production of pottery and of the imports of earthenware are shown in the following tables. Details of the imports of earthenware for 1907

and 1908 were given on page 273. The total value of the imports in 1908 was \$2,190,784. The annual importation of earthenware and chinaware during the past nine years has varied from \$1,000,000 to \$2,000,000.

Annual Production of Pottery.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1888.....	27,750	1895.....	151,588	1902.....	200,000
1889.....	Not available.	1896.....	163,427	1903.....	200,000
1890.....	195,242	1897.....	129,629	1904.....	140,000
1891.....	258,844	1898.....	214,675	1905.....	120,000
1892.....	265,811	1899.....	185,000	1906.....	150,000
1893.....	213,186	1900.....	200,000	1907.....	253,809
1894.....	162,144	1901.....	200,000	1908.....	200,541

Imports of Earthenware.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880.....	322,333	1890.....	695,206	1900.....	959,526
1881.....	439,029	1891.....	634,907	1901.....	1,114,677
1882.....	646,734	1892.....	748,810	1902.....	1,275,093
1883.....	657,886	1893.....	709,737	1903.....	1,406,610
1884.....	544,586	1894.....	695,514	1904.....	1,611,356
1885.....	511,853	1895.....	547,935	1905.....	1,636,214
1886.....	599,269	1896.....	575,493	1906.....	1,692,359
1887.....	750,691	1897.....	595,822	1907 (9 mos.)...	1,422,880
1888.....	697,082	1898.....	675,874	1908.....	2,190,784
1889.....	697,949	1899.....	916,727		

LIME.

The quantity of lime produced in Canada and sold during 1908, as per returns received, was 3,601,468 bushels, valued at \$712,947, or an average of 20 cents per bushel; as compared with 4,755,316 bushels valued at \$974,595, also an average price of 20 cents in 1907. These statistics, though fairly complete, do not include any estimates for one or two firms not reporting, and are, therefore, slightly underestimated.

The production or sales by provinces during 1907 and 1908 are shown in the following table.

A small quantity of lime is annually made in Prince Edward Island, but mostly from stone brought over from Nova Scotia, and the figures have been included with the statistics for that Province.

10,084—18½

Lime Production by Provinces, 1907 and 1908.

Province.	1907.			1908.		
	Bushels.	Value.	Average per Bushel.	Bushels.	Value.	Average per Bushel.
		\$	cts.		\$	cts.
Nova Scotia.	45,000	16,000	35	51,068	16,102	32
New Brunswick.	554,330	124,786	23	155,748	34,262	22
Quebec.	1,053,856	262,990	25	857,700	201,357	23
Ontario.	2,333,879	393,474	17	2,087,731	358,507	17
Manitoba.	431,548	84,793	20	138,786	24,192	17
Saskatchewan.	3,700	1,480	40			
Alberta.	173,040	41,225	24	135,000	34,500	26
British Columbia.	159,963	49,847	31	176,435	44,027	25
	4,755,316	974,595	20	3,601,468	712,947	20

It will be noted that there has been a decreased production in every province. The average price per bushel varied in 1908 from 17 cents in Ontario to 32 cents in Nova Scotia. In 1907 the lowest average price per bushel was also 17 cents, in Ontario, and the highest 40 cents, in Saskatchewan.

The production by provinces in 1906 was as follows :—

	Bushels.	Value.	Average Price.
		\$	cts.
Nova Scotia.	50,000	13,600	27
New Brunswick.	405,450	94,290	23
Quebec.	923,563	201,816	22
Ontario.	2,885,000	496,785	17
Manitoba.	620,201	119,792	19
Alberta.	240,000	56,200	23
British Columbia.	106,192	26,694	25
	5,230,406	1,009,177	19

The production of lime given for Ontario in 1906 is as published by the Ontario Bureau of Mines. The figures for all other provinces are from direct returns collected by this department.

The Province of Ontario has contributed about 50 per cent of the total value of the production in 1908, as compared with 40 per cent in 1907, and 49 per cent in 1906.

Statistics of the quantity of lime made each year since 1896 in this Province have been ascertained by the provincial Bureau of Mines, and are as follows :—

Annual Production of Lime in Ontario.

(As ascertained by the Ontario Bureau of Mines).

Calendar Year.	Bushels.	Value.	Cents per Bushel.	Calendar Year.	Bushels.	Value.	Cents per Bushel.
		\$				\$	
1896.....	1,880,000	222,000	12	1903.....	3,400,000	520,000	15
1897.....				1904.....	2,600,000	406,800	16
1898.....	2,620,000	308,000	12	1905.....	3,100,000	424,700	14
1899.....	4,342,500	535,000	12	1906.....	2,885,000	496,785	17
1900.....	3,893,000	544,000	14	1907.....	2,650,000	418,700	16
1901.....	4,100,000	550,000	13	1908.....	2,442,331	448,596	18
1902.....	4,300,000	617,000	14				

Exports and Imports : The value of the lime exported in 1908 was \$43,316 ; while the imports during the fiscal year 1908 were 129,379 barrels valued at \$99,611. Statistics of exports and imports are given in the next two tables :—

Imports of Lime.

Fiscal Year.	Barrels.	Value.	Fiscal Year.	Barrels.	Value.
		\$			\$
1880.....	6,100	6,013	1895.....	12,008	5,743
1881.....	5,796	4,177	1896.....	10,239	7,331
1882.....	5,064	5,365	1897.....	16,108	10,529
1883.....	7,623	9,224	1898.....	12,850	9,002
1884.....	10,804	11,200	1899.....	15,720	11,124
1885.....	12,072	11,503	1900.....	12,865	11,211
1886.....	11,021	9,347	1901.....	19,657	14,534
1887.....	10,835	8,524	1902.....	24,602	17,584
1888.....	10,142	7,537	1903.....	31,108	22,470
1889.....	13,079	9,363	1904.....	54,359	39,639
1890.....	8,149	5,360	1905.....	98,676	71,588
1891.....	6,259	4,273	1906.....	134,334	93,630
1892.....	6,132	4,241	1907 (9 mos.).....	88,919	67,573
1893.....	6,879	4,917	1908... Duty, 20%....	129,379	99,611
1894.....	6,766	4,907			

Exports of Lime.

Calendar Year.	Value.	Calendar Year.	Value.	Calendar Year.	Value.
	\$		\$		\$
1891.....	119,853	1897.....	53,177	1903.....	131,412
1892.....	121,535	1898.....	49,594	1904.....	73,838
1893.....	86,623	1899.....	73,565	1905.....	85,723
1894.....	83,670	1900.....	80,852	1906.....	57,072
1895.....	71,697	1901.....	99,194	1907.....	55,903
1896.....	70,820	1902.....	116,009	1908.....	43,316

SAND-LIME BRICK.

Under the heading of clay products the production of clay building brick has already been recorded. For structural purposes, however, there is a rapidly growing use of building brick of other classes, including cement brick, and sand-lime or silica brick. Owing to the ease with which cement brick may be made, no attempt has been made to obtain complete statistics of their production. Returns have, however, been requested from the manufacturers of sand-lime brick.

According to returns received the production in 1908 was 17,288,260, valued at \$152,856; as compared with 16,492,971, valued at \$167,795, in 1907.

SANDS AND GRAVELS.

No statistics are available as to the production of sand and gravel, but the trade returns of the Customs Department show an export and an import of these materials for a number of years, of which a record is given in the accompanying table:—

Annual Exports of Sand and Gravel.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1893.....	329,116	121,795	1901.....	197,302	117,465
1894.....	324,656	86,940	1902.....	159,793	119,120
1895.....	277,162	118,359	1903.....	355,792	124,006
1896.....	224,769	80,110	1904.....	399,809	123,803
1897.....	152,963	76,729	1905.....	306,935	152,805
1898.....	165,954	90,498	1906.....	336,550	139,712
1899.....	242,450	101,640	1907.....	298,095	119,853
1900.....	197,558	101,666	1908.....	298,954	161,387

Annual Imports of Sand and Gravel.

Fiscal Year.	Tons.	Value.	Fiscal Year.	Tons.	Value.
		\$			\$
1893.....	26,065	31,739	1901.....	35,749	42,891
1894.....	41,573	33,506	1902.....	47,381	58,668
1895.....	19,609	24,779	1903.....	91,518	95,647
1896.....	18,953	24,604	1904.....	110,634	107,547
1897.....	21,308	25,222	1905.....	85,339	92,722
1898.....	32,148	43,287	1906.....	116,500	173,727
1899.....	30,288	42,209	1907 (9 mos.).....	171,700	177,412
1900.....	35,713	41,280	1908.....	266,704	223,043

SLATE.

The New Rockland slate quarries of Richmond county, Que., have been operated for a number of years under lease by Messrs. Fraser and Davies, and have been the only source of production recorded. The Pacific Slate Co. of Victoria is reported to have begun the shipment of slate from Jarvis inlet, 80 miles north of Victoria, B.C., but no returns of production from this source were received. The production of slate in 1908 was valued at \$13,496, and in 1907 at \$20,056.

In 1908 slate was exported to the value of \$2,539.

The imports of slate during the last two fiscal years were as follows :—

Imports of Slate during fiscal years 1907 and 1908.

Slate and Manufactures of	9 months ending March, 1907.	12 months ending March, 1908.
Roofing slate	\$51,826	\$72,588
School writing slate	17,559	26,834
Slate pencils.....	2,505	3,898
Slate of all kinds and manufactures of.....	23,630	27,749
	95,520	131,069

Statistics of annual production, exports, and imports are shown in the three following tables :—

Annual Production of Slate.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
1886.. ..	5,345	\$64,675	1898.....		\$40,791
1887.....	7,357	89,000	1899.....		33,406
1888.....	5,314	90,689	1900.....		12,100
1889.....	6,935	119,160	1901.....	715	9,980
1890.....	6,368	100,250	1902.....		19,200
1891.....	5,000	65,000	1903.....	5,510	22,040
1892.....	5,180	69,070	1904.....	5,277	23,247
1893.....	7,112	90,825	1905.....		21,568
1894.....		75,550	1906.....		24,446
1895.....		58,900	1907.....	4,335	20,056
1896.....		53,370	1908.....	2,950	13,496
1897.....		42,800			

Exports of Slate.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1884.....	539	6,845	1894.....	187	3,610
1885.....	346	5,274	1895.....	36	574
1886.....	34	495	1896.....	301	8,913
1887.....	27	373	1897.....	Nil.	Nil.
1888.....	22	475	1898.....	Nil.	Nil.
1889.....	26	3,303	1899.....	Nil.	Nil.
1890.....	12	153	1900.....	Nil.	Nil.
1891.....	15	195	1901.....	16,750	10,000
1892.....	87	2,038	1902 to 1907.....	Nil.	Nil.
1893.....	178	3,168	1908.....		2,539

Imports of Slate.

Fiscal Year.	Value.	Fiscal Year.	Value.	Fiscal Year.	Value.
	\$		\$		\$
1880.....	21,431	1890.....	22,871	1900.....	53,707
1881.....	22,184	1891.....	46,104	1901.....	72,187
1882.....	24,543	1892.....	50,441	1902.....	72,601
1883.....	24,968	1893.....	51,179	1903.....	84,437
1884.....	28,816	1894.....	29,267	1904.....	86,057
1885.....	28,169	1895.....	19,471	1905.....	93,228
1886.....	27,852	1896.....	24,176	1906.....	112,941
1887.....	27,845	1897.....	21,615	1907 (9 mos.).....	95,520
1888.....	23,151	1898.....	24,907	1908.....	131,069
1889.....	41,370	1899.....	33,100		

STONE.

Under this heading is included the production of building and ornamental stone, flagstone and paving stone, rubble, riprap, and crushed stone. The kinds of stone quarried may be classified as granite, sandstone, limestone, and marble.

With respect to granite, returns have been received from nearly all the known operators, and the production in 1908 was reported as valued at \$282,320 ; as compared with \$194,712 in 1907.

For sandstone, limestone, and marble, complete statistics have not been received. The value of the production of building and crushed stone in the Province of Ontario in 1908, as ascertained by the Ontario Bureau of Mines, was \$530,041 ; as compared with a value of \$675,000 in 1907.

A rough estimate of the production of building and other stone, not including granite, in Canada, in 1908, would place the total value at about \$1,800,000.

The production of stone in 1907 and 1908 may be summed up as follows :—

Production of Stone, 1907 and 1908.

Stone.	1907.	1908.
	\$	\$
Building and crushed stone etc.	1,830,000	1,800,000
Flagstone.....	2,550	6,293
Granite	194,712	282,320
Total.....	2,027,262	2,088,613

Exports and Imports :—The exports of stone are classified simply as wrought and unwrought ; the total value of the exports in 1908 was \$58,005, and in 1907 only \$7,320.

The annual exports since 1890 are shown in the accompanying table :—

Exports of Stone and Marble, Wrought and Unwrought.

Calendar Year.	Wrought.	Unwrought.	Calendar Year.	Wrought.	Unwrought.
	\$	\$		\$	\$
1890.....	21,725	43,611	1900.....	5,933	115,711
1891.....	13,398	46,162	1901.....	5,917	157,739
1892.....	7,698	47,424	1902.....	8,632	124,829
1893.....	9,102	12,532	1903.....	7,684	46,295
1894.....	22,576	34,130	1904.....	4,760	17,802
1895.....	8,587	51,616	1905.....	3,545	13,089
1896.....	4,934	32,897	1906.....	23,097	4,675
1897.....	9,415	42,034	1907.....	4,233	3,087
1898.....	2,526	65,370	1908.....	15,194	42,811
1899.....	5,092	101,931			

The imports are classified as building stone of all kinds, except marble, manufactures of granite and other stone ; and marble and its manufactures. The total value of the imports of stone in 1908 was \$651,525, as compared with a value of \$450,594 in 1907 (9 months).

Details of imports in 1907 and 1908 are shown in the next table :—

Imports of Stone, Fiscal Years 1907 and 1908.

	1907 (9 months.)		1908.	
	Tons.	Value.	Tons.	Value.
		\$		\$
Building stone, rough (1).....	14,374	58,398	19,344	80,950
" dressed (2).....	12,353	78,967	17,166	90,740
Granite, sawn only.....	5,128	31,931	1,019	5,450
" mfgs. of.....		69,673		119,381
Paving blocks.....		15,028		32,566
Manufactures of stone, N.O.P.....		20,147		34,851
Marble and mfgs. of—				
Marble, sawn only.....		81,715		155,668
" rough, not hammered or chiselled.....		6,435		5,319
" manufactures of, N.O.P.....		88,300		126,600
		450,594		651,525

(1) Flagstones, granite, rough freestone, sandstone and all building stone not hammered or chiselled.

(2) Flagstone and all other building stone, sawn or dressed.

Statistics showing the annual imports of building stone, manufactures of granite, etc., marble, and flagstone are shown in the following table:—

Annual Imports of Stone.

Fiscal Year.	Building Stone.		Manufactures of Granite, etc.	Marble.	Flagstones.	Total Value.
	Rough.	Dressed.				
	\$	\$	\$	\$	\$	\$
1880.....	32,824	3,146	29,408	63,015	.....	128,393
1881.....	7,823	50,326	36,877	85,977	241	181,244
1882.....	32,848	775	37,267	109,505	848	181,243
1883.....	33,429	1,632	45,636	128,520	99	209,316
1884.....	46,232	4,856	45,290	108,771	1,158	206,307
1885.....	28,433	2,058	39,867	102,835	1,756	174,949
1886.....	36,776	4,899	41,984	117,752	9,443	210,854
1887.....	47,819	6,549	41,829	104,250	10,966	211,413
1888.....	84,263	2,110	47,487	94,681	21,077	249,618
1889.....	89,723	10,591	61,341	118,421	15,451	295,527
1890.....	126,456	5,699	84,396	99,353	48,995	364,899
1891.....	151,119	19,771	61,051	107,661	36,348	372,950
1892.....	85,169	10,381	39,479	106,268	15,048	256,345
1893.....	47,609	8,901	49,323	96,177	8,500	210,510
1894.....	48,097	4,811	49,510	94,637	2,429	199,504
1895.....	37,732	6,550	51,050	83,422	84	178,838
1896.....	42,737	11,393	51,499	90,065	Nil	195,694
1897.....	27,442	11,272	34,026	77,150	227	150,117
1898.....	25,322	3,173	41,240	95,894	1,540	167,129
1899.....	43,494	4,546	60,148	101,879	Nil	210,067
1900.....	63,376	1,157	57,039	94,017	63	215,652
1901.....	45,039	1,039	66,639	96,159	116	208,992
1902.....	69,972	29,102	72,397	130,424	1,231	303,126
1903.....	71,202	16,664	78,629	153,481	Nil	319,976
1904.....	59,864	33,914	141,165	181,511	Nil	416,454
1905.....	49,004	53,813	150,160	145,466	Nil	398,448
1906.....	66,994	65,134	178,435	189,589	Nil	500,152
1907.....	58,398	78,967	136,779	176,450	Nil	450,594
1908.....	80,950	90,740	192,248	287,587	Nil	651,525

Marble.—In the Province of Quebec, marble is being quarried in Missisquoi county, at Philipsburg, by the Missisquoi Marble Co., Ltd., of Montreal. This Company was organized in 1907 and took over the quarry and plant formerly owned by the Philipsburg Railway and Quarry Co. About six well defined varieties of marble are obtained, comprising light, dark, and green grey, and various cream coloured varieties. The quarry is provided with channelling machines, steam drills, and derricks; while the mill and finishing shops contain gang saws, planer, lathe, polishing machines, pneumatic tools, etc. The marble is in considerable demand as a decorative stone, and has been used in a number of buildings in the larger cities of Canada, besides finding an important market in the United States.

In Ontario, marble quarries have been opened up in Dungannon and Faraday townships, Hastings county, by the Ontario Marble Quarries, Limited. Marble quarries are also being opened up in Lanark county by the North Lanark Marble and Granite Quarries, Ltd. In British Columbia three marble quarries have been

operated, one opposite Kaslo, worked by W. G. Gillett of Nelson; the Canadian Marble and Granite Company's quarry, eight miles from Lardo, and the quarry of the Nootka Marble Quarries, Ltd., on Nootka sound, west coast of Vancouver island. The last mentioned Company did not commence shipments until December, 1908.

The last two quarries have been described in the Report of the Minister of Mines for British Columbia for 1908.

"The Canadian Marble & Granite Company's Kootenay marble quarry is situated on the Canadian Pacific Railway Company's Lardo-Trout Lake branch, about eight miles from Lardo, which is near the head of Kootenay lake. The marble lies at an angle of about 45 degrees, pitching towards the railway, which passes immediately in front of the quarry. It is estimated that the deposit of marble is approximately 700 feet in thickness. The top layer is about 50 feet thick, of a light-coloured, crystalline marble similar to the Georgia 'Cherokee' marble. Then there are about 10 feet, also crystalline, like the Georgia 'Dark Creole'. Next follow six feet of light blue, and then two feet similar in appearance to Italian statuary marble. Other layers include various shades of blue marble, from light to very dark.

"The marble is described as being somewhat harder than the average Vermont marble, but it takes a better polish, and retains it. The deposit is large, free from flaws and cracks, and so unbroken that blocks can be taken out in size up to any dimensions that it is practicable to get machinery to lift the blocks with. The quarry has been worked about two years by the Canadian Marble and Granite Company.

"The marble is shipped from the quarry in what is known to the trade as 'gang-saw blocks', to either Nelson, B.C., or Edmonton, Alberta, in which cities the Company operates marble works, and is there worked up for monumental or building purposes, both interior and exterior, as required. The finished building material has been used for fronts or trimmings of buildings at Nelson, Lethbridge, Calgary, Edmonton, Strathcona, Regina, and other cities; while for lavatory and other interior fittings, tiles, etc., it has also been in good demand.

"Nine men were employed all last summer at the quarry, and when the works at Nelson are running in full order some 50 men are employed. The value of the material sent out last year was about \$50,000, and the indications are that there will be a substantial increase over that output in 1909".

The Nootka Marble Quarries Company has been for the past two years opening up a quarry on the beach at Nootka sound. The development already done has demonstrated that there is a deposit of solid marble of good commercial quality from which stone can be quarried in blocks as large as the appliances used can handle. A blue-grey marble with white and whitish markings is being produced, which is free from flaws and suitable for monumental work or for being sawed up for purposes of interior decoration or utilities.

"The Company, besides opening out its quarry, has built a suitable and efficient dock at which the coasting steamers can land, and has erected a marble

dressing plant consisting of 2 marble cutting gang saws, a marble lathe, polisher, etc., all suitably housed and provided with the required steam power, while the necessary accommodations for the men employed have also been erected. The plant only came into operation about the first of December, 1908, so that by the end of the year the actual product was only of nominal value and consisted more particularly of samples showing what the product would be. These samples, however, have served their purpose, and the Company is in receipt of sufficient orders for the product at good prices to necessitate the immediate doubling of the dressing plant, and this is now being done".

Only incomplete statistics of the marble production in 1908 were received, but the total value of the finished stone would probably be not less than \$125,000. The value of the imports of marble and its manufactures in 1908 was \$287,587. There has been no record of any marble production between the years 1897 and 1906 inclusive, but during the previous ten years there was a small annual production as shown in the accompanying table.

Annual Production of Marble.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886.....	501	9,900	1892... ..	340	3,600
1887.. ..	242	6,224	1893.....	590	5,100
1888.....	191	3,100	1894.....	Nil.	Nil.
1889.....	83	980	1895.....	200	2,000
1890.....	780	10,776	1896.....	224	2,405
1891.....	240	1,752	1897 to 1906 inclusive	Nil.	Nil.

Granite:—The total value of the production of granite in 1908 was \$282,320; as compared with a value of \$194,712 in 1907. The production is used chiefly for building, paving, and monumental work.

The production was obtained from practically the same sources as have been worked for a number of years.

Statistics of the production since 1886 are shown as follows:—

Annual Production of Granite.

Calendar Year.	Tons.	Value.	Calendar Year.	Tons.	Value.
		\$			\$
1886..	6,062	63,309	1898.....	23,897	81,073
1887.....	21,217	142,506	1899.....	13,418	90,542
1888.....	21,352	147,305	1900.....		80,000
1889.....	10,197	79,624	1901.....		155,000
1890.....	13,307	65,985	1902.....		210,000
1891.....	13,637	70,056	1903.....		200,000
1892.....	24,302	89,326	1904.....		150,000
1893.....	22,521	94,393	1905.....		226,305
1894.....	16,392	109,936	1906.....		278,419
1895.....	19,238	84,838	1907.....	151,136	194,712
1896.....	18,717	106,709	1908.....		282,320
1897.....	10,345	61,934			

Flagstone :—A small quantity of flagstone is annually quarried at Bishops Crossing, Que., and sold in Sherbrooke, Iberville, St. Johns, and St. Hyacinthe. The production in 1907 was valued at \$2,550, and in 1908 at \$6,293.

The annual production since 1886 is shown in the following table :—

Annual Production of Flagstone.

Calendar Year.	Quantity.	Value.	Calendar Year.	Quantity.	Value.
	Sq. ft.	\$		Sq. ft.	\$
1886.....	70,000	7,875	1898.....		4,250
1887.....	116,000	11,600	1899.....		7,600
1888.....	64,800	3,580	1900.....		5,250
1889.....	14,000	1,400	1901.....		4,575
1890.....	17,865	1,643	1902.....	87,300	7,760
1891.....	27,306	2,721	1903.....	79,200	6,688
1892.....	13,700	1,869	1904.....	75,600	6,720
1893.....	40,500	3,487	1905.....	81,000	7,650
1894.....	152,700	5,298	1906.....	59,400	5,280
1895.....	80,005	6,687	1907.....	27,000	2,550
1896.....		6,710	1908.....	61,200	6,293
1897.....		7,190			

SEP 13 1983

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